JULY • 1960

FIREMEN

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Dockside Fire in Oakland, California — *see page 7*

ONAL FIRE
TECTION
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65th
year

HIGHLIGHTS—NFPA ANNUAL MEETING page 10

GET THE MOST FROM THE MAINS! - - - page 12

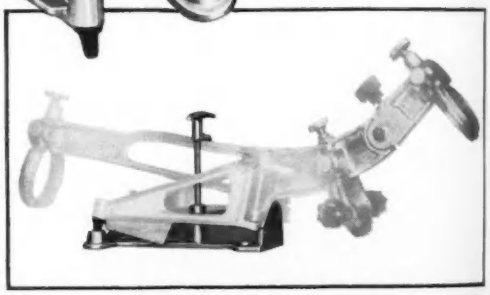
NEW

AKRON BRASS "TROJAN"

HOSE HOLDER

NOW! A hose holder you can put on a charged line!

See New Akron Brass Catalog 60—Page 34



Compact Mounting Fixture

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No need to shut down, can be attached to any charged 2½" or 3" line.

ADJUSTABLE for stream direction.

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Made of tough, heat-treated metal. Legs fold against body for easy storage. Weighs 14 lbs. Fixture for compact truck mounting.

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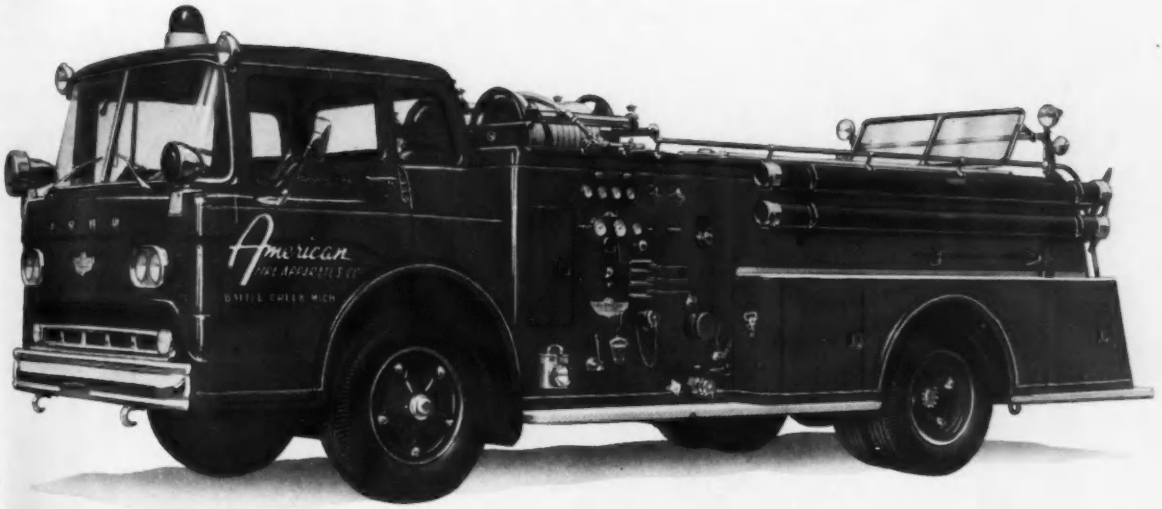

Barton-American 4-stage, 750 GPM Pump entirely driven by main truck drive shaft.

. . . see why owners *stay* satisfied with American Fire Apparatus

At the start, you get much more of what *you* want when you select American Fire Apparatus. That's because you can specify *more features* that suit your particular needs. Then, because we prize satisfied owners, we protect you with superior quality construction all the way!

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Equipped with famous Barton-American Front-Mounted Fire Pump.

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AWWA Improved Post Type 4¼", 4½", 5¼", 6¼" Valve Opening Two or Three Way
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■ Just one fire hydrant that does not function when needed will disrupt your entire fire protection network.

One way to assure the dependable operation of every hydrant in your system is to insist upon an effective hydrant inspection, maintenance *and replacement* program. With such a program, valuable time is not lost connecting and disconnecting hose to an inoperable hydrant.

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Compression-type main valves, automatically-force-flushed drain valve mechanisms and "O" ring stem seal are just a few of the quality features found in *all* Mueller Fire Hydrants. These features are typical of the great attention to detail in research, design and engineering that becomes a part of every Mueller product.

The hydrants shown here are just a part of the full line of fire hydrants produced by Mueller Co. for municipal, industrial and private fire protection systems.

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Full line of inlets available for all hydrants

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INCORPORATED IN 1930

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Before You Light it...
Be Sure Your Stove is Working Properly
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Where Did Your Match Go?
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PLAY IT SAFE and advertise with **N.F.P.A. Match Books ALL-WAYS!**

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MAKE CHECKS PAYABLE TO: "SPARKY" Match Program and mail to:

Because of freight and tax complications shipments are restricted to continental U.S.A.

Gentlemen:
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SPARKY Match Program
Attention: M. Netzorg
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No. Cases	No. Books	Price Per Case	Total Price*
1	2,500	$27.50	$ 27.50
2	5,000	24.50	49.00
4	10,000	21.25	85.00
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25	62,500	19.50	487.50

Add local or state sales and use taxes. Prices include prepaid freight and Federal Excise Tax.

(*) These low prices are possible because of NFPA's quantity buying.

(SIGNATURE).....

CHECK MUST ACCOMPANY EVERY ORDER — NO C.O.D. ORDERS

Please attach your letterhead. If shipment is to an address other than that shown above, indicate on your letterhead the address to which shipment should be sent. Thank you.

USE THIS ORDER FORM...TODAY!

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1 ✓

$14.00 worth of books in attractive holder for only

$9.75

Including:

"Operating Fire Department Pumpers" — $4.00
"Handling Hose and Ladders" — $2.50
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"Fire Fighter's Manuals"

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Including:

NFPA "Inspection Manual" — $4.00
"Respiratory Hazards of the Fire Service" — $4.25
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2. ☐ Fire Fighter's Manuals
3. ☐ Fire Station Reference Set

☐ A check for $.....enclosed
☐ Please bill me

Name.....

Address.....

City.....State.....

FIREMEN

Volume 27 Number 7

A monthly magazine published for the fire service members of the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Massachusetts.

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Many persons in authority do not understand what organization and manpower is required to produce an effective fire department. Consequently, they may cause silly things to happen which can greatly reduce the efficiency of a department.

The safety director of one city recently announced the purchase of two quintuple combination pumper-aerial ladder trucks for the purpose of eliminating the personnel of two ladder companies. He had the mistaken idea that engine company crews equipped with the new apparatus could do both engine and truck work. This was heralded in the local press as a great boon to the taxpayers. It was not explained how undermanned engine companies could perform both engine and ladder company duties simultaneously. What the local fire chief felt about the move was not made clear, but presumably he must do as his boss directs.

In another municipality the manager came up with the questionable statistic that the average fire department in the United States has 1.4 fire fighters per 1,000 population. He noted that the fire department under his financial control had 2.0 fire fighters per 1,000 population. Straightway he gave the fire chief an edict to cut the department to 1.4 men per 1,000 population.

The fact that the 1.4 figure, even if a mathematically correct average, would include many departments where the members still work much more than the 56-hour week of his department was not taken into consideration; neither was the fact that, to have the same number of men on duty with the shorter work week, would require 1.8 men per 1,000 population. Also ignored was the fact that many of the fire departments contributing to the 1.4 statistic had few ladder companies or at best one man assigned to ladder trucks, whereas the community in question has many large wooden buildings requiring manned ladder companies.

It is too bad that fire experience which may involve needless loss of life is often needed to arouse public demand for an adequate level of protection after arbitrary budget trimmers have cut the protective services below an efficient operating level. Last year a FIREMEN report on fire department manpower showed that with a 56-hour work week 2.2 to 2.4 firemen per 1,000 population (not 1.4) are needed for effective minimum manning of essential engine and ladder companies. To provide full recommended fire company manning the figure would be higher.

In another city that has badly undermanned fire companies, the manager asked the chief whether a consolidation of existing companies into better manned units might not be desirable, apparently not realizing that the department was seriously short of both companies and manpower and needed at least 50 additional fire fighters to provide effective minimum manning even for the existing companies. A study of the manpower requirements based upon various work weeks presented in the June, 1959, FIREMEN and available in reprint form (NFPA No. F26–4, 25 cents per copy) will give fire chiefs some answers to the problem of justifying effective fire company manpower.

●

Always a problem to fire fighters is the rupturing of drums or other containers of flammable liquids. This month's cover shows a typical incident, which occurred in Oakland, California, April 18. Fire burned in this open yard approximately five minutes before discovery and the sending of a telephone alarm. First responding companies found that cases of quart containers and 55-gallon drums of flammable liquids were involved and rupturing. Stored pallet materials and two open sheds were also ignited. Because of the rupturing containers fire fighters could not get into position to use hand lines effectively. Control was established by means of portable monitor nozzles and turret streams from a fireboat. (*Wide World Photo.*)

WARREN Y. KIMBALL, Managing Editor; PAUL R. LYONS, Editor; HENRY S. GERE, Advertising Manager; ROWENA D. DORES, Editorial Assistant; SHIRLEY TOBEY, Fire Service Department; VIRGINIA STILES, Advertising Department.

Making a Good Job of It

by Warren Y. Kimball, Managing Editor, FIREMEN Magazine, and Manager, NFPA Fire Service Department.

HOW TO WRITE A GOOD REPORT

ONE of the inevitable chores of the modern fire department officer is the writing of numerous reports and communications. If a report is well written, concise and factual, it has more chance of obtaining the desired action and of eliminating needless misunderstanding and confusion. A poorly written report may get very little attention because it is not clear to the person receiving the report what the true situation is or what action is wanted. In some cases reports have been so poorly prepared that they cannot be given proper consideration without embarrassment to all concerned. The purpose of report writing should be:

1. To recommend or obtain some desired action. (Such as needed repairs to a piece of equipment) or,
2. To place certain facts in the official record. (Such as injuries sustained by a member in the line of duty.)

For certain types, such as fire reports, official forms may be provided and all that the officer must do is to fill out the form. However, at various times fire officers have occasion to prepare a report or communication on some subject on which there is no specific form or guidance. This is where ability to state facts correctly and succinctly is of prime importance.

To prepare a report, memorandum or other communication, the following procedures are suggested:

Get all the pertinent facts together. This avoids the embarrassment of having incorrect or incomplete information. The facts make the report convincing and authentic. It helps the writer avoid vague generalizations such as: "It appears," "it seems," "I question," or "I believe." Such comments are certain indication that the person writing the report is not sure of the facts or has not adequately investigated the matter under consideration.

For example, a fire department report concerning the need for additional driver training read:

> It appears that much damage has been inflicted upon the apparatus — to clutches, transmissions, brakes, etc. and it seems that most of it could have been avoided if the men operating the apparatus were capable of driving same. (Vague or imprecise words are underlined. Not only are the words indefinite but it causes the reader to wonder how much is "much.")

The same thought might be more clearly and forcibly expressed as follows:

> The maintenance records of this department show that in the past year 15 major pieces of apparatus were out of service for a total of 26 weeks due to damage to clutches, transmissions, and faulty brakes. Most of this damage can be eliminated by:
>
> 1. greater care in the selection and qualifications of drivers,
> 2. a continuing driver training program,
> 3. an in-service maintenance program by competent mechanics to detect and correct minor defects before major damage occurs.

Such a report is more convincing and authoritative because it defines how much time apparatus has been out of service from these specified causes and recommends specific corrective action.

After the facts have been assembled, an outline should be prepared so that the subject matter may be presented in a logical sequence which leads up to the desired action. A simple outline might include a statement of the problem or situation, supporting facts and figures, and recommended or desired action.

Preferably, a report should be confined to one general subject. If there are several parts these might be enumerated by subparagraphs designated I, II, III or A, B, C. It is important that unrelated matters be made the subject of separate reports so that the required action may be taken on each subject and the reports may be properly filed.

For example, a communication to headquarters might indicate that the carburetor on a pumper was not functioning efficiently and the turnout bell in the station needed repairs. The person receiving the report would have the problem of determining whether to forward the report to the apparatus maintenance division or the fire alarm division. Copies would have to be made before forwarding the report through channels or before filing after action had been taken.

When a suitable outline has been prepared, it is usually desirable to write a rough draft, preferably in pencil. Write out the facts and then start to edit, ruthlessly. The person who is going to receive the report is busy. He does not want to read a lot of meaningless words or puzzle over what you really mean. He is not impressed that your vocabulary rivals that of

William Shakespeare. He wants facts clearly stated in as few words as possible. Avoid unnecessary modifying adjectives. For example, it may not be necessary to say that a ladder is "grimy, dirty, greasy, unclean." Rather, it should be enough to report that the ladder was "very dirty and poorly maintained." In general, it is best to use short one- and two-syllable words where these express the thought. The best writer makes greatest use of the short, concise words that came into the English language from the old Anglo-Saxon rather than the flowing, involved words derived from Norman and French influence. Lincoln's Gettysburg Address and the 23rd Psalm have often been cited as examples of great thoughts expressed in the most basic words.

Try to keep your sentences short. Break long compound sentences into two short sentences, each containing a single thought. Each sentence must be a complete statement. Also, avoid long paragraphs. They are tiring and cause the reader's interest to wander. Do not say the same thing twice.

Here is an example of a sentence from a report that includes several separate thoughts:

In order to encourage cleanliness and improve morale, it is suggested that all employees be furnished coveralls and that a contract be given to a laundry to afford weekly changes.

These two ideas are worthy of separate sentences:

In order to encourage cleanliness and improve morale, it is suggested that all employees be furnished coveralls. It is recommended that a laundry service be obtained to provide a change of work clothing each week.

When the draft of your report has been culled of useless words, reread it for hidden or double meanings. When possible, let someone else read it and see if it conveys the thought clearly without distortion. For example, a fire department report recommending a stenographer for the chief read:

The chief should have a girl working directly under him. Every activity of his office should be revealed to her.

What was meant was:

The clerical work in the chief's office requires a full-time stenographer. A qualified secretary can carry on much of the essential office routine when the chief must be away.

Once the facts have been assembled and a satisfactory draft has been prepared, the final draft of the report should be typed on the proper departmental stationery. (Be sure to replace the typewriter ribbon and carbon paper as needed and to keep the keys of the typewriter clean. The purpose of a report should be to get action. An illegible report gets little favorable attention. It may be an affront to the person to whom it is addressed.)

The top or head of the report should mention the subject of the communication in a minimum number of words. It should also state to whom the report is addressed and who has written the report.

The date is important and should be at the top of the document as in a letter. If any system of subject or file numbers is used, the correct number should be included.

In the body of the report the subject should be presented as briefly as possible and the desired or required action stated.

The report should be signed with name and rank of the person making the report indicated. If any approvals are needed, these would be included.

A typical brief report or communication follows:

XYD Fire Department
(Interdepartmental Form 5)

Date: August 1, 1960
File No. PDQ-3

To: Superintendent of Apparatus
From: Captain, Engine 6

Subject: Faulty operation of carburetor on pumper, serial No. 3-62

In compliance with general order No. 7–12–60 requiring reporting of fire apparatus engine performance deemed unsatisfactory by company commanders, I am reporting that the carburetor on pumper 3–62 does not give reliable performance. Your records will show that this carburetor was adjusted three times in the past two months.

Accordingly, I request that consideration be given to exchanging this carburetor as soon as possible or making such other correction of this defect as may be necessary.

Respectfully submitted,

John H. Finnegan
Fire Captain, Engine 6

Approved: Clyde L. Claffin
District Fire Chief

Remember that "words are the tools of thought." If you think clearly you should be able to write clearly. Simple words and thoughts are best and most convincing. You do not have to tell all that you know. Present the essential information. Keep the related information available on file in case it is needed to amplify any part that comes under further discussion. If a matter is controversial, it may be important to have some "ammunition" in reserve. For example, in legal proceedings enough evidence is presented to obtain an indictment but the pertinent detailed facts may be brought out in trial.

Never engage in personalities or animosities in any official communication, no matter how provoked you may be. Animosity implies bias or hostility and will usually negate your recommendation on the ground that you are prejudiced. Always try to remain objective. An angry man once told Abraham Lincoln that he was going to write a scathing letter about a certain individual. "Do that," said Lincoln. "Where shall I send it?" the man asked. "Don't send it, destroy it," Lincoln said, "You have gotten the matter out of your system."

As one last word, avoid making the job of preparing reports or communications writing a big chore. If you can speak and express your thoughts verbally, with a little effort and practice you can set them down on paper. Above all, be your own severe critic. Any good writer uses the "blue pencil" ruthlessly. It's like pruning a tree or shrub to get choice fruit; the cuttings are good fuel for the fire.

One successful fire officer who came up the hard way affirmed, "The pen is mightier than the sword or even the gold trumpets. I got what I needed by sending carefully considered reports to headquarters. The chief was afraid to ignore them as the facts were made a matter of record."

The seminar on aviation fire protection attracted a capacity audience on Monday morning, May 16. Fire safety of airport facilities as well as aircraft were discussed in detail.

New president of NFPA, Loren S. Bush of San Francisco, was elected during the opening session of the convention. President Bush is Chief Engineer of the Pacific Fire Rating Bureau.

HIGHLIGHTS — 64th NFPA ANNUAL MEETING

Head table dignitaries at the Opening General Session of the convention included General Manager Percy Bugbee, President Henry G. Thomas, and Board Chairman T. Seddon Duke.

A total of 1,351 NFPA members and guests attended the 64th Annual Meeting at the Queen Elizabeth Hotel, Montreal, Quebec, May 16–20. Fire chiefs from many parts of North America and several distant countries were included in the enthusiastic audiences that attended sessions of the five-day meeting. A few of the highlights are shown on these pages. A more complete pictorial report of the meeting appeared in the June issue of NFPA *Fire News*. (*All photos by Business and Industrial Photographers Limited, Montreal.*)

President Thomas accepts for NFPA an award from the Boy Scouts presented through J. Sharp Queener of E. I. du Pont de Nemours & Company.

(*Above*) Another of the well-attended technical sessions of the convention. These sessions started early and often ran late, yet enjoyed the support and interest of substantial and responsive audiences.

(*Right*) A 3-hour symposium on extinguishing media attracted a large audience. The effects and characteristics of foam, compressed gas, and dry chemicals were discussed.

Assistant Chief John E. Clougherty of the Boston, Massachusetts, Fire Department, illustrated the fatal dangers of space heaters like this one during the meeting of the Fire Marshals Association of North America.

Resplendent in uniform, J. A. Brooker, Chief Fire Service Officer of the British Ministry of Aviation, described airport fire protection in the United Kingdom.

The Canadian Fire Service was discussed by Chief W. P. Donahue of Quebec, representing the Canadian Association of Fire Chiefs.

During a luncheon of the Society of Fire Protection Engineers, A. G. Murphy told of the St. Lawrence Seaway.

A PLEA FROM CHILE!

ON THE day that the letter below arrived in the NFPA Executive Office, newspapers reported another severe earthquake shock in Southern Chile. By now, readers of FIREMEN magazine should be aware that earthquakes and landslides in that country have reportedly killed more than 5,000 persons and have left more than two million people without homes.

Comandante Barragan's letter is a direct appeal for help from the fire service organizations of the world. Readers who may wish to respond to this urgent plea by a contribution of funds for Chilean relief may do so through their local chapter of the American Red Cross. Any member who is in a position to contribute materials, such as rescue or first-aid equipment or other fire department supplies, should notify the NFPA Executive Office, giving a full description of the goods to be given including their weight and location. The NFPA will then determine and advise on the best methods of shipment.

Coronel (Chile), 14th June, 1960

Mr. Warren Y. Kimball
Managing Editor, NFPA FIREMEN Magazine

Dear Sir:

With the earth still trembling off and on under our feet, I am taking the liberty of requesting your assistance after the catastrophe which has devastated a great part of our country. On reading the interesting publications of the NFPA, and especially the FIREMEN magazine, I have been able to appreciate your preoccupation and personal devotion in introducing new methods and techniques which will enable fire brigades to improve their methods for the protection of the lives and properties of the inhabitants of the communities in which they serve.

After the earthquake of May 21st our Voluntary Fire Brigade has worked continuously for more than a fortnight helping the people of Coronel and Schwager, who were affected in one way or another, in the best way possible. However, due to the lack of equipment we were not in a position to render all the assistance which was required. Our institution is financially poor and the few subscriptions and donations which are collected annually must be invested in the renewal of fire fighting equipment, and even then the funds are insufficient.

Through your FIREMEN magazine I have been able to gather that in the U.S.A. there is a great deal of first-aid and rescue equipment which is used by fire brigades and civil defense brigades to help the victims of fires, accidents and other calamities. In our present emergency we have noted the great lack of this equipment which we shall most certainly have to obtain in the near future, because the Province of Concepcion, in which Coronel is situated, is noted for its earthquakes, Chile being a seismic country par excellence.

The shortage of funds, which at present hardly cover the most essential expenses, added to the poverty and backwardness in which our country has sunk due to this misfortune, does not permit us even to dream of raising enough money to purchase this rescue and first-aid equipment. It is for this reason that I am appealing to you, as the great driving force behind the fire brigades of the world and your notable experience in the field of the prevention and fighting against fires and disasters, and send this call for help in my capacity of Comandante del Cuerpo de Bomberos de Coronel, associate member of the NFPA, so that through your influence and with your help we might receive a donation of rescue and first-aid equipment to enable our volunteers to do a more effective job in such emergencies as the present.

We are making the same request through official U. S. Consular authorities in Concepcion, although our dignity should not allow us to do so, but we are forced to by our desperate situation. We have also been able to observe the unlimited generosity of the U. S. Government and people. I have sent you this personal letter which I beg you to consider without any obligation whatever, leaving it entirely up to you to accept our appeal or ignore it. Whichever may be your decision, you can rest assured that you, and the whole U. S. people, deserve our most unconditional gratitude.

Yours sincerely,

CARLOS OPAZO BARRAGAN
Comandante del Cuerpo de Bomberos de Coronel
Chile, South America

Contrast of fire ground action is shown in these two pictures. Streams in photo at left are inadequate and insufficient for big fire control problem. Streams at right from deck gun, ladder pipe and hand lines show better attack. Fire officers must be prepared to cut down on number of streams to provide fewer but more effective heavy streams in the critical moments of fire attack. *(Photo at left by Ken Hardin, Amarillo Daily News. Acme News photo above.)*

GET THE MOST FROM THE MAINS!

Effective use of water supply calls for knowledge of water main capacity, hydrants, nozzle tips, placement of apparatus and other factors

MORE and more we are seeing a serious error in the fighting of large fires which experienced and competent fire ground commanders would not tolerate. We refer to the tendency of each engine company arriving at the fire to set up a separate stream whether or not water is available. Pictures of many fires show a single area covered by a barrage of feeble streams from small tips, most of which are not even hitting the fire. Such streams are practically useless.

Good fire fighting practice for more than 85 years has dictated that, for large fires, sufficient lines must be siamesed together to supply adequate volume and pressure to make each stream effective. A siamese is standard equipment for every engine company, yet this useful device seems little used today. Frequently, heavy stream nozzles are not properly supplied. Fire fighters of 50 years ago, who had to work with steam pumpers, would be ashamed at the results that many departments are getting with today's modern equipment. The shame is further compounded because most fire officers know these things but fail to practice them on the fire ground.

For any municipal location it is not at all difficult to determine the approximate amount of water available and to plan to use it in effective streams. This information is generally available to fire departments from underwriters' reports and other flow test data for all areas where major fires can be expected. Knowledge of available flows can be quickly ascertained on the fire ground by proper attention to pump gages as explained in the NFPA manual *Operating Fire Department Pumpers.*

Let us assume that we have a big fire in an area where approximately 2,500 gallons per minute is available for fire fighting. If half of this flow were used for heavy streams it would supply two 1½-in. tips at 600 gpm each and five 2½-in. hand lines with standard 1⅛-in. tips requiring 250 gpm each. If desired, one or two of the hand lines could be wyed to supply 100 gpm 1½-in. leader lines for protecting minor exposures.

Each 1½-in. tip for a heavy stream needs at least 600 gpm. A flow of 500 gpm will only permit 56 pounds nozzle pressure and an ineffective heavy stream with poor reach. If only 500 gpm is available use either a 1¼- or a 1⅜-in. tip as these tips will use 500 gpm at effective nozzle pressures. However, in many cases it is better to concentrate the water in fewer good heavy streams than to have more small streams.

There are two prime considerations in placing streams at large fires:

1. Have good streams to cover all exposures so that the fire cannot spread to property which is not already involved.
2. Use good heavy streams having volume and reach to "black out" the main fire and reduce the heat which causes the fire to spread.

One good stream covering each position adequately is better than many poor ones. Where sufficient water is available more streams can be set up to increase the effectiveness of the attack.

One of the most important techniques to consider is to direct the placement of pumpers responding on multiple alarms and mutual aid calls so that they do not take water from the companies already working effectively. In most cases, other mains a little further away will provide additional water without seriously decreasing volume and pressure available from hydrants near the fire. The best plan is to set up relays from these more remote hydrants to add to the "fire flow" which is immediately available.

Another trouble commonly encountered with water supplies at large fires is that, while a given flow may be available within a block of the fire, some of the hydrants near the fire may be on small water mains. Such hydrants may not be capable of supplying the full capacity of 750 or 1,000 gpm pumps, particularly when other hydrants in the area are in use.

The importance of having the proper supply for the nozzle size used cannot be overemphasized. A cut of only 10 per cent in the flow of a 250-gallon stream, a mere 25 gpm, may result in an inefficient stream and low nozzle pressure.

For example, 1,000 gpm will provide four good 250-gallon streams or five poor 200 gpm streams. It is true that nozzle pressure can be increased by using a smaller tip but the quantity of water is not enough to have much effect on a large fire and the reach of the stream is reduced. Actually, it is better to have a little extra volume and pressure for each stream when fighting the big fires. This is shown by the following table.

1⅛-in. Tip		1½-in. Tip	
Nozzle Pressure	Gpm	Nozzle Pressure	Gpm
36	225 (poor)	56	500 (poor)
45	250* (fair)	68	550 (fair)
54	275 (good)	81	600* (good)
64	300 (excellent)	95	650 (excellent)

*Recommended minimum flows.

The man who does not know the correct flows required for the nozzle tips in use in his department and how to use the fire flow obtainable in the area cannot hope to be a successful fire ground commander at a big fire.

At a recent large fire a 12-in. main in front of the property was well gridironed and supplied by a larger main nearby. Well over 4,000 gpm was available from hydrants within a block of the fire. However, so many companies were operating without regard to the water supply situation that practically none of the streams were effective.

This fire was in an area of recognized hazard where the department should have been familiar with the water supply situation. Pre-planning might have indicated that half of this 4,000 gpm could be devoted safely to heavy streams. This would have provided at least three good streams from deck guns or ladder pipes. The remainder would have provided at least eight good 2½-in. hand lines. Or, if desired, four heavy streams and six hand lines could have been employed. Additional water might have been obtained by relaying from more distant hydrants.

Remember that five 1,000 gpm pumpers can easily use more than 5,000 gallons a minute. Ten 750 gpm pumpers can exceed 7,500 gpm. It is not unusual at a big fire to have 15 or 20 pumpers present. In the majority of cases, pumping capacity will exceed the water supply available within 1,000 feet of the fire. This means that the officer in charge must decide the number and size of streams that will be used and must never permit more streams to be operated than the water supply (not the pumper capacity) will accommodate.

At most fires where there is a water supply problem it will be found that through faulty placing of the engines certain hydrants and mains are overloaded causing the pressure to drop seriously. At the same time there are other hydrants with plenty of water not being used. At every big fire there should be a chief assigned to water supply to see that lines are taken from pumps which have the water to supply them.

Jeep Unit in Davenport

Chief Lester R. Schick of the Davenport, Iowa, Fire Department reports that he recently has put into service this four-wheel drive jeep truck. A three-way turret nozzle is mounted on the rear. The gun can be directed to the front as the truck moves toward large area fires. It has also been useful on a large dump area where deep fires occur. The truck also has a winch and cable mounted in the rear and an electrically operated snowplow blade which can be mounted on the front.

New Pumpers for San Francisco

The San Francisco Fire Department recently accepted six new 1,000 gpm American LaFrance pumpers and a 100-ft. steel aerial ladder. Shown with these new units and other apparatus above are (left to right) Donald G. O'Neill, district manager of American LaFrance Corporation, San Francisco Fire Chief William Murray, Assistant Chief Lindecker and Lt. Don McMillan.

A METHOD OF DESIGNATING ASSIGNMENTS FOR

CALL AND VOLUNTEER FIRE DEPARTMENTS

Here are some suggestions for fire company manning which can be modified to fit local conditions

FIRES occur at various times of day or night and in all sorts of weather. The responsibility that each fire department accepts is to man its apparatus effectively around the clock. A volunteer or part-paid fire company may have many names on its roster and yet not be certain of having an adequate crew at all times unless it is so organized that its members have agreed to be available for fire duty on some definite schedule. It is not reasonable to expect that an individual member will be able to respond immediately to every alarm.

More and more volunteer fire departments are facing up to the need of having duty rosters with definite crews assigned to cover the apparatus in the event of fire. In some volunteer departments the members even take turns bunking in at the station to man the apparatus on the night shift. Others have a posted roster indicating the crew that is to ride the apparatus at any given time with other members standing by to cover when the crew on duty is out of quarters.

To have effective manning at all times each volunteer department should check its roster as to availability of its members. Each major piece of apparatus should have a minimum of four qualified members ready to man it at all times and required manpower should also be available for auxiliary apparatus.

A number of schemes are in use for assigning tours of duty to volunteer and call fire departments. Some members find it easier to be available for night duty and other men can be depended upon for daytime response. Under one scheme these groups can be assigned to two definite platoons covering day and night duty, with each platoon taking turns in covering apparatus on weekends. There should be enough men on each platoon so that when members are absent due to vacation, sickness or for other reasons the apparatus will still be manned properly. It is recommended that each platoon or group in a volunteer fire department have at least two members qualified to cover every position which must be manned on the apparatus. If a good volunteer or part-time call fireman is going to be away he will always let his officer know or at least make sure that a qualified member is available to cover the position for which he is responsible.

The best volunteer departments generally are organized into fire companies along the same lines as paid fire departments with each company responsible for certain apparatus and fire ground duties.

Some volunteer departments in suburban communities have trouble in getting enough qualified members to man the apparatus during weekdays when many of the members are at work in places too remote to answer first alarms. Some of these employ sufficient paid fire fighters to handle the apparatus during daytime. Thus, the paid crew may be on duty 50 hours a week Monday through Friday with volunteer or call men manning the apparatus for the remaining 118 hours of each week. To provide fully paid manning round the clock might be economically unacceptable in a small community but the paid men on the day shift can care for the apparatus and stations, make fire prevention inspections and perform other duties of a modern fire department which the volunteer members may not have the time to perform.

In brief, every fire department is expected to be able to man its major fire fighting apparatus at all times. The public expects this. Each volunteer or part-paid department should check its attendance records and make an analysis of the manpower response of each company for various typical periods such as weekdays, weekends and holidays, and nights. If manpower is inadequate for all periods the chances are that more active members are needed on the fire department roster. If manpower is good at certain times and poor at other times an effort should be made to find men who are able and willing to answer alarms for the necessary periods. Often the trouble is that alarms during working hours are too frequent for members to leave their work and run to fires. One of the problems of manning volunteer departments during daytime is that many employers object to having men run out for frequent grass, brush and other minor fires. In some cases this is dealt with by having a small squad available for this sort of call and holding the regular companies and apparatus for handling structural fires.

Dividing up this responsibility by each man agreeing to be available at certain times may solve the problem. With this article we present a system whereby volunteer firemen may be assigned to platoons taking turns at being immediately available to answer alarms. Each platoon must have sufficient officers and men to man all first line apparatus during its tour of duty with the other platoon providing a reserve force.

On the following pages are some suggested procedures to guide a fire chief in setting forth an effective company organization in volunteer and paid-on-call fire departments so that apparatus will be manned adequately and competently at all times.

Manning of Fire Companies and Apparatus

1. To assure proper manning of the fire apparatus of this department, members are to be assigned to fire companies charged with the operation of specific pieces of apparatus.

2. Each fire company shall consist of at least 16 active and qualified members. Four of these shall be company officers in charge of directing the operation of the company when they are on duty, four members shall be designated as regular fire apparatus operators, and eight or more members shall be designated as fire fighters.

3. In addition to regular active company members there shall be a reserve list consisting of:
   a. Older, or other members not available for regular duty but experienced and available during major emergencies or available as relief men to cover for vacancies.
   b. Members available for limited duty.
   c. Recruits or partly trained applicants having probationary status and awaiting vacancies for full membership in the department.

4. All alarms for building fires shall be answered by at least two engine companies, one ladder company, and a chief officer. (*Where this apparatus is available. — Ed.*)

5. Each major piece of apparatus requiring fire company manning (first line pumpers or ladder trucks) should respond to alarms with at least four members of proper rank and qualifications. Company officers shall see that this manpower is available.

6. In all cases the four-man crew for each company shall consist of an officer in charge of the company on duty, a qualified apparatus operator, and two fire fighters who shall serve as hosemen or laddermen in accordance with the duties assigned to their companies. Duty assignments will be given to each regular company member so that a required response of 12 men plus a chief officer will be available at all times day or night.

7. To assure that each essential position is covered at all times and to give each member equal opportunity, four members will be assigned to each position on the company rosters. It is essential that at least one of these men be immediately available to respond with the apparatus assigned to his company at all times. This means that at least 25 per cent of the time each member should be immediately available at the fire station to man his company's apparatus.

8. In order that each member may know when he is responsible for first alarm manning of his company's apparatus each will be assigned to a working platoon by the chief upon recommendation of the assistant chiefs. Each platoon, designated "Platoon A" and "Platoon B," will be responsible for the first alarm manning of the company apparatus 50 per cent of the time in accordance with the duty schedule posted with these orders.*

9. Two men will be assigned to each position for each platoon of each company. One of these must always be available when his platoon is responsible for first alarm response. The first man of each duty pair to reach the station on receipt of an alarm will take his assigned position on the apparatus as officer, operator, or fire fighter. The second man of each duty pair to reach the station will be available to operate the auxiliary apparatus assigned to his company as set forth in these rules.

   The second man of each duty pair shall not be required to respond if he is certain that the position to which he is assigned is covered, provided that he shall have notified his officer in advance when he will not be available for response and has made certain that the assigned position has been covered.

10. For the purpose of this organization, the apparatus of this department is hereby designated in three status classifications, as follows:
    a. First line company apparatus which shall be immediately manned for response to all alarms for structural fires or other major fires requiring full first alarm response. Each fire company will be assigned one piece of major first line apparatus of the type appropriate for the normal work of that company, *i.e.*, pumping engine, ladder or squad truck.
    b. Auxiliary apparatus for which no separate companies are provided but which are assigned to the major fire companies for maintenance and operation. Auxiliary apparatus includes: water tank trucks, brush fire trucks, lighting and salvage trucks, ambulances† and rescue trucks.†

    In most instances except when otherwise directed by the dispatcher on orders from the chief in charge, the auxiliary trucks when operated as supplemental to the properly manned regular fire companies, require either a single driver or a two- or three-man detail from the company to which they are assigned.
    c. Reserve apparatus consisting of major apparatus (pumpers and ladder trucks) not manned for first alarm response but manned by the off-duty platoon for use at major fires or when needed to cover for apparatus working at fires. Reserve apparatus may also be used by the on-duty platoon when the regular apparatus is not available for service.

11. No person may operate a piece of apparatus of this department in response to an alarm of fire who has not been designated as a qualified apparatus operator by the chief of department upon recommendation of the assistant chief in charge of the platoon to which the member is normally assigned. When a company officer believes that a member of his company has sufficient training and experience to operate apparatus, the officer may request his assistant chief to certify qualification setting forth the member's experience in writing. This rule shall not prevent a company officer from assigning members to act as operators in practice sessions or when returning apparatus to quarters. It is desired that all members become qualified to operate apparatus as soon as practicable.

12. When a call is received requiring response of auxiliary apparatus assigned to any company (such as an ambulance, rescue truck, tank truck, or grass fire truck not having a separate crew), the first members of the duty platoon of the company concerned to arrive at the station shall man and respond with the required auxiliary apparatus. Other members of the platoon on duty shall stand by to man the regular first line apparatus. Assistant chiefs on duty shall see that sufficient men are available to man all major apparatus for regular first alarm response and if necessary shall order the dispatcher to place the off-platoon or reserve force on call to cover any major piece of apparatus which does not have at least four members available.

13. Members of the off-duty platoon are expected to be available and responsible for manning the reserve apparatus assigned

*The platoons may work on a 24-hour on and off basis or an alternating day and night shift basis.

†This does not prevent the organization of separate rescue companies and ambulance squads where needed, but where such units are organized for rescue purposes including non-fire rescue duty, they do not replace any of the engine companies or ladder companies or reduce the manpower required for basic fire fighting operations but merely provide supplemental manpower and services beyond the required basic company manning.

to their companies (except when it is filling in for first line apparatus and is adequately manned by the on-duty platoon) and shall be available for duty at major fires unless they have notified their company officer that they will not be available and a substitute has been provided. Chief officers may order members of the off-duty platoon to respond to a fire as needed. Unless otherwise instructed, the off-duty platoon members shall respond with the reserve apparatus assigned to their company.

14. Reserve apparatus shall be designated by the company number to which it is assigned but with the designation or prefix "R" (indicating reserve) to distinguish it from the first line apparatus. (Example: "R-E1" = Reserve Engine 1.)

15. Members of the off-duty platoon are free to go about their personal business without responsibility for manning their company's first line apparatus. They are not expected to respond to first alarm fires unless called but are charged with making themselves available for manning the second line or reserve apparatus; members of the off-duty platoon shall operate in accordance with the rules for manning the first line apparatus. At least four qualified members of proper rank and designation are expected to be available for reserve duty with each company.

16. In the event of a multiple or general alarm ordered by the chief in charge of a fire, the members of the off-duty platoon including companies not having reserve apparatus assigned shall report to their stations and take assignments as directed by the dispatcher on orders of the chief in charge. The off-duty platoon chief shall be responsible for seeing that the reserve apparatus is properly manned and he shall direct the operation of the reserve units at major fires.

17. Members will not respond on the apparatus of another company unless they have been assigned to that unit as a relief man or are ordered to respond with the apparatus by an officer.

18. Where on-duty platoon members not required for manning their company's first-line apparatus respond with auxiliary apparatus, the officer or member in charge of the auxiliary apparatus shall report directly to the chief in charge of the fire for orders.

19. Only members who have been qualified as operators may drive the auxiliary apparatus to fires. However, they need not be designated as regular apparatus operators for their company.

20. When the department dispatches apparatus to out-of-town or mutual aid calls, the on-duty platoons of the companies dispatched shall man the apparatus with the number of men required for effective operation. On-duty members not needed to man the apparatus answering the call shall stand by to man the reserve apparatus as directed by the assistant chief or dispatcher in charge. The off-duty platoon need not be called or alerted unless there are insufficient men available to provide the required manning for the department's normal first alarm response.

21. Members not needed to man the apparatus sent out of town shall not respond with the apparatus or go to the fire as they are expected to be available to cover their own community in accordance with the regular assignments of their platoon and company. If additional manpower is needed at an out-of-town fire the officer in charge of the apparatus dispatched shall notify the dispatcher and the assistant chief in charge of the platoon shall designate additional manpower to respond and shall have off-duty members alerted as necessary to provide full normal first alarm coverage while companies are absent.

"SPEAKING OF RU

From a talk by George L. Morse, Product Line Manager, Oxygen Equipment, Mine Safety Appliances Company, Pittsburgh, Pennsylvania

WHEN a person's respiration ceases from any cause, such as inhalation of carbon monoxide or other gases, oxygen deficiency, drowning or electric shock, speed in ventilating the lungs is mandatory if respiration is to be restored. The quicker some method of artificial respiration is applied to the victim, the greater the probability of successful restoration of breathing. This means that, as soon as a victim of asphyxia is discovered, something must be done immediately.

Dr. Cecil Drinker once said something to the effect that no breathing machine could resurrect the dead. This, unfortunately, has been construed by some as a facetious remark. It is, in fact, a profound truth which can never be said too often. Of course, what Dr. Drinker meant was that, even though an automatic mechanical resuscitator supplying life-giving oxygen may be more effective than any other means of providing resuscitation, the machine is of value only when it is at hand. Therefore, don't wait for a resuscitator to arrive before doing something to ventilate the victim's lungs.

We could quibble about the use of the term "resuscitation" as applied to the procedures followed in the restoration of breathing. However, popular usage has given the term "resuscitation" a meaning which I believe we all understand as the restoration of normal respiration. It would be presumptuous for a layman to attempt to evaluate the most effective technique for performing resuscitation, but certainly it is not amiss to mention various procedures.

The most widely accepted manual method of artificial respiration in the United States for some 25 years or more was the Schaefer prone pressure method. The Sylvester method was used also to some extent. The records show that both methods appeared to be successful in overcoming asphyxia in a number of cases.

In Europe, a method which held much favor was one named after its originator, the Dane, Holger Neilsen. This is substantially the arm lift-back pressure method, which was accepted widely in late 1951.

The U. S. Department of Defense has a vital interest in resuscitation and the possibility of the inhalation of the so-called "nerve gases" served to strengthen this interest because of the difficulty in successful resuscitation after a person has inhaled such a gas. Intensive

F USCITATORS . . ."

research on the subject was conducted by a number of eminent doctors and physiologists at medical institutions, colleges and universities. These were coordinated by Dr. David B. Dill, Scientific Director of the U. S. Army Chemical Center Medical Laboratories, and had the cooperation of the National Research Council. Actually, there were and still are two phases of this research — mechanical resuscitation and artificial respiration by manual means.

There is still, and probably will continue to be, a strong difference of opinion on mechanical resuscitation on the part of competent and sincere investigators. I propose to delve briefly into some of the facets of this matter a little later if for no other reason than to point out that the problem is a complex one and has no simple answer. However, of equal importance is the fact that investigation continued in the area of resuscitation without the use of mechanical devices and you have undoubtedly heard and read about what is regarded by many as the newest and best method of mouth-to-mouth resuscitation or rescue breathing. (*See December, 1958* FIREMEN — *Ed.*)

Actually, this method is the oldest known as it dates back to Biblical times and has been used with eminent success for many years in infant resuscitation. The results of using it in comparison with other manual methods have been dramatic. Evaluation of these methods on a scientific basis is difficult, for deliberately stopping a person's breathing has certain dangers. It is possible to use muscular depressants, such as curare, or curare-like drugs, to induce a non-breathing state which is relatively safe. Then, different methods of artificial respiration can be used while the oxygen blood levels, carbon dioxide levels and pulmonary ventilation are measured with precision. The mouth-to-mouth method has some advantages not the least of which is a head position which tends to insure an open air passage to the lungs which is difficult, if not impossible, to achieve with other methods. Also, respiratory obstruction can be detected readily and quite frequently overcome, if not too severe, by increased exhalation pressure on the part of the administrator.

The other side of the coin is that this method is not without its problems. It does not lend itself to the relatively easy training and practice of other procedures.

Automatic mechanical resuscitators, using oxygen for operation as well as for its therapeutic value, are normally of two types — those using intermittent positive pressure and those using intermittent positive pressure followed by negative pressure during exhalation. The concept of the first, which uses the same principle as mouth-to-mouth resuscitation, is that the lungs be inflated to a predetermined pressure during inhalation, with the pressure then terminated permitting exhalation by the passive recoil of the diaphragm and the intercostal muscles. This most closely approximates normal breathing. The other method is the same in the inhalation phase but after the first part of exhalation by passive recoil, a negative pressure is developed, usually by a venturi.

I am sure that you are all aware that these two different methods have proponents who favor one or the other but, regardless of this area of controversy, there are certain desirable characteristics which exist in both types of equipment. Among these are:

1. They provide oxygen.
2. They indicate when the air passage is blocked by rapid cycling or "chattering."
3. They can be used where space is at a premium.
4. They do not tire.
5. They provide uniform operation.
6. They provide an aspirator which may be used to remove respiratory obstruction.

Many competent medical investigators have concluded that either type will restore respiration equally as well under almost all conditions. However, there is a difference and, therefore, there must be advantages in both types, particularly since many of each type are in use and have proved completely adequate. Recent medical investigation has shown that, under conditions where the victim is in a relatively normal state other than loss of respiration, today's widely used resuscitators which provide oxygen are effective.

However, if there is altered pulmonary resistance and compliance, this situation can alter materially. As an engineer rather than a physiologist, I understand this to mean that increased pulmonary resistance can result from the air passages being reduced in effective diameter by broncho-constriction, mucous or bits of food. Increased pulmonary resistance is produced by factors such as pulmonary edema (fluid in the tissues of the lung) which may be caused by many things, a principal one being inhalation of irritant gases such as chlorine.

With increased pulmonary resistance or compliance, adequate ventilation may not be obtained at the pressures delivered by preset fixed pressure devices and the ability to increase the inspiratory pressure is thus mandatory if the lungs are to be ventilated properly. The so-called "nerve gases" can produce this situation and they may seem unrelated to the fire service, as indeed they would be, except in the event of an enemy gas attack or inhalation of a common insecticide such as the organic phosphate parathion. It is not improbable that a victim of inhalation of an organic phosphate insecticide or an irritant gas may be encountered by the fire department.

Any resuscitator must ventilate the lungs and an open air passage is mandatory to insure this. Therefore, always provide good head position for the victim with the head tilted back. Also, any of the automatic mechanical units must have a relatively good mask fit or the cycling pressure will not build up and the resuscitator valve will deliver only a continuous flow of oxygen rather than cycling.

SOME SUGGESTIONS ON

PROTECTING ANNEXED AREAS

Chiefs need to consider water supply, alarm systems, weak fire companies and sources of manpower.

A PROBLEM encountered by many fire departments is how to extend municipal fire protection coverage to large areas of annexed territory. Some of these districts have been covered by small volunteer fire companies before annexation but many are substantially unprotected, except for a fire warden or other conservation officer charged with suppression of wildland fires.

Some cities include additional fire stations, men and apparatus in their annexation plans. In other cases, despite protests from the fire chiefs concerned, the city fire department is ordered to answer calls in newly annexed areas even though this means long runs by companies needed to protect older parts of the city.

The problems of protecting these annexed areas can be quite serious. Large undeveloped tracts are subject to extensive grass and brush fires which, during dry seasons, may utilize a major part of the fire force needed for protecting the city proper. Large new housing developments which include hundreds and even thousands of frame homes in a single real estate tract pose a serious problem. It is almost impossible to provide adequate first alarm response for these developments unless the fire department is expanded to proportions adequate for the enlarged city.

Water supply poses another major problem and many cities have provided large capacity water tankers to accompany apparatus to fires in areas beyond the mains. With the rapid expansion into new areas comes development of major shopping centers, sometimes featuring combustible construction without automatic sprinklers or other good private fire protection. Schools and churches present other major problems.

For some cities, the annexation of a new area may introduce irritating problems if there is no extension of the municipal fire alarm system. The fire fighters will have to become familiar with the best routes of response to every section of the new area. Similarly, persons living in the annexed area will have to learn the best means of summoning the fire department quickly. All too often alarm facilities are almost nonexistent so that delayed alarms may be frequent.

We predict that sooner or later unfavorable fire experience will compel the organization of additional fire companies to cover these annexed areas, because property owners paying city taxes will demand such protection. Meanwhile, where new areas are remote from existing stations and are not sufficiently developed to warrant establishment of full paid fire companies an initial step might be the organization of companies with part paid and part call or volunteer members. Preferably the apparatus operators and company officers should be full paid employees but sufficient part-time men would be provided so that the apparatus would be fully manned on all calls to which it is assigned. The call men should be required to meet all of the qualifications of full paid members and be subject to the same rules and discipline.

In some remote sections of sparsely developed areas fully volunteer fire companies might be useful even though in city limits. Such companies would assure immediate response in the districts where they are located. It should be recognized that incorporating outlying territory within city limits does not immediately make it urban in nature. It is the development of the community that indicates the type of fire protection organization needed. A well-equipped and well-trained volunteer fire company at hand is often to be preferred to an undermanned paid company that must travel 5 or 6 miles, or which may not be available when needed.

One mistake commonly made in rapidly expanding communities is to increase the number of fire stations without an adequate increase in manpower. Thus, the department may have more companies but none with effective manning. As a general rule, manpower should not be taken from companies in high value districts to cover new territories. When new companies are organized they should be manned to provide effective units. If enough full paid men are not immediately available some part-time people, possibly former volunteer firemen, can be used for a while in the new districts.

Chiefs of rapidly expanding cities frequently are reluctant to use volunteer or part paid men, perhaps because these chiefs have had no experience with trained call or volunteer personnel. There may be problems connected with civil service status. Other problems might arise when companies or personnel must be transferred from one district to another for fires or for covering assignments. Accordingly all too many cities try to get by with 2 or 3 paid men on duty with outlying fire companies even though fire officials know that this does not provide effective fire service. The difficulty is that once the city fathers and the populace in general become accustomed to these weak fire companies they accept them as normal and adequate. The shorthanded company tends to become the standard for the department.

A more intelligent arrangement where the budget provides insufficient paid men is to fill the roster with part paid men to provide full manning. Then in subsequent years as the new areas are developed more jobs can be put on a full-time basis. The entire problem boils down to the fact that it is the responsibility of the fire chief in particular and the fire service in general to keep its needs before the public. In the majority of communities adequate manpower for every fire company is a primary need.

Latest addition to Richmond's fire fleet, which includes 24 Mack pumpers and 4 aerials, is this new Mack triple-combination 750 gpm unit. Powered by a Mack Thermodyne 275 hp engine, it features a cab-mounted portable 1100 gpm monitor nozzle, with straight and fog tips.

To keep ahead in fire protection Richmond adds still another Mack

With the addition of this new Mack Model C-85 cab-forward pumper to its fire fleet, Richmond, Virginia, once again places its reliance on Mack's unsurpassed ability to pump large amounts of water effortlessly for the duration of any fire.

Over the years, Macks have been the core of Richmond's pumper fleet and have proved themselves time and again. At a local flour mill fire, for instance, Macks stayed on the line for 30 hours, pumping continuously. But—because they were Macks—they were more than equal to the challenge.

This is the kind of performance *you* can count on from Mack apparatus. Whatever your requirements, Mack can fill them with custom-built equipment . . . in a variety of styles including cab-forward and standard models . . . with a wide range of Mack-built engines headed by the famous Mack Thermodyne® 707C. Why not look into the advisability of adding Macks to your department? Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario.

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FIRST NAME FOR

FIRE APPARATUS

COMPLETE LINE OF PUMPERS—500 to 1250 GPM...SQUAD AND HOSE WAGONS...AERIALS 65' to 146'...COMBINATION LADDER TRUCKS

GETTING A "FLEXIBLE" ATTACK WITH THE

TWO-PIECE ENGINE COMPANY

QUITE a number of fire fighters have come to realize that an engine company responding with two pumpers has a much greater flexibility and fire fighting potential than the ordinary engine company equipped with a single combination pumper which must supply small lines from the booster tank, lay hose from the water supply and do the pumping. The present pumping engine developed from a combination of three separate machines: the chemical engine for small line service, the hose wagon for laying big lines, and a pumping engine which was stationed at the water supply. The hose wagon also commonly carried a "wagon pipe" or monitor nozzle for providing a heavy stream utilizing the full capacity of the pumper.

Later the chemical tank was added to the hose wagon making a combination wagon. Shortly after fire apparatus was motorized, the pump was transferred to the wagon because the same gasoline engine that propelled the vehicle could drive the pump and the cost of providing and manning two pieces of apparatus was avoided. However, in adopting this change a great deal of flexibility was lost because it is impossible for a company having a single combination machine to perform all of the operations simultaneously. If the combination pumper is used to lay hose there may be delay in getting the pump back to the hydrant to pump. Some fire departments have tried to solve the problem by using two separate fire companies as a team, one to lay hose and operate its booster pump and the other to connect to a hydrant to provide volume. The drawbacks to this method are that two companies are required to do the work that one can do with two pumpers and the separate companies may not arrive together or even from the same direction so that the coordination of operations is slower and more difficult.

Underwriters' recommendations call for a second piece of apparatus carrying additional hose to be assigned to half of the engine companies in high value districts. Where these "wagons" are provided and are equipped with pumps a department will be greatly strengthened by having a number of powerful heavy duty companies which can immediately utilize the full output of a hydrant in various ways set forth below and which can get large volumes on a fire much faster than can the same number of men operating a single combination pumper.

Minimum manpower needed on duty with a two pumper company are an officer and four men, of whom the officer and two men normally ride the "wagon" and two men, including the pump operator, ride the pump which is to be connected to the hydrant.

The pump serving as the wagon is equipped with two or more pre-connected 1½-in. fog lines. It also has a wagon pipe capable of utilizing the full capacity of the engine at the hydrant.

The way the two-piece company operates is that the first piece serving as the wagon lays lines from the pump at the hydrant. These lines serve as supply lines for the "wagon" pump at the fire. As soon as the wagon reaches the fire, one or more 1½-in. fog lines are placed in service from the booster tank until the big lines are charged to provide the wagon pump with its full rated capacity. In fact, with present centrifugal pumps it is quite common to supply 1,200 to 1,400 gpm or more to the pump at the fire (depending upon the flow available from the hydrant used).

It is not generally appreciated that 2½-in. hose when used for pump supply will readily carry 350 to 500 gpm or more per line at conventional pump pressures not exceeding 150 pounds at the pump at the hydrant. The reason for this is that all the energy of the supply pump is used for moving water. The energy or pressure needed for the nozzle is provided by the pump at the fire. As shown in Table 1, these large flows can be moved up to 500 ft. between pumps without increasing pressure at the source pump.

Best results are obtained by laying two 2½-in. lines between pumps from a divided hose body. This immediately provides from 720 to 1,050 gpm to the pump at the fire. If more water is needed, a third line can be laid. Of course, larger diameter hose greatly increases the possible flow per line between the pumps. For routine operations a single 2½-in. line between pumps will provide enough water for two good 1½-in. lines and a good 2½-in. backup line; the second big line, even if not needed, provides a factor of safety.

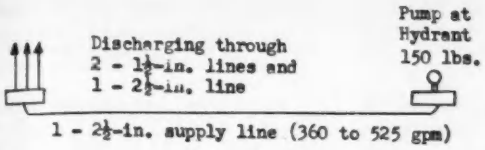
Even departments in small cities and suburban areas would be well advised to have at least one two-piece engine company. We predict that if they have one, they will organize more. In many cases this can be done at no added expense because hundreds of fire departments have a number of pumpers now operating as single piece companies with two- or three-man crews

Gallons per Minute Moved with Two-Piece Engine Company

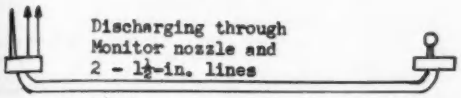
(Pump at Hydrant Supplying Pump at Fire)

Length of Lines between Pumps	Number of 2½-in. Lines between Pumps		
	1 Line	2 Lines	3 Lines
250	525	1,050	1,575
300	475	950	1,425
350	435	870	1,305
400	400	800	1,200
450	380	760	1,140
500	360	720	1,080

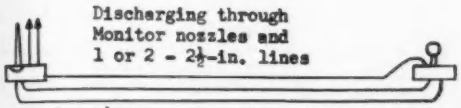
Flows which can be expected when the evolutions shown on the opposite page are used, with pumps operated at normal pressures.



Basic evolution shows pump at hydrant supplying wagon pump through a single 2½-in. line. Wagon pump then gives pressure for hand lines.

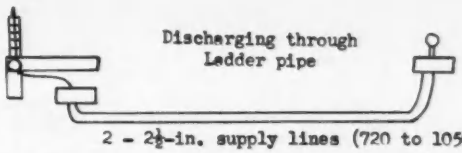


Flow is doubled when another 2½-in. supply line is used between pumps, permitting use of heavy stream nozzle and hand lines at fire.

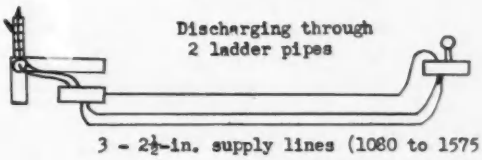


Addition of third supply line gives ample volume of water for heavy fire attack. Planning and practice can speed up this evolution.

capable of providing only small streams. Two of these companies could be combined to make a powerful 1,000 gpm company. These pumpers could still operate as separate units as needed.



Good ladder pipe streams require a pump at base of ladder. Here is a simple, but important, evolution for supplying a ladder pipe stream.



Two ladder pipes require a pumper nearby and adequate supply lines from water source. This evolution may be hampered by a poor hydrant supply or inadequate connections to pump near the ladder. Note that ladder truck is jackknifed for maximum stability.

Some of the evolutions practiced by a two-piece engine company with a 5-man crew are illustrated. Think what you could do in your own department with this type of operation.

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A New, Precise Hygrometer

AN INTERESTING device which probably will have wide application in the fire protection field and industry is the "xerometer" shown in the photo above. Measuring 2¼ in. in diameter and 4¾ in. long, the unit weighs only 8 ounces and, in use, can be held in the hand or simply mounted. Its principal purpose is to indicate directly the relative moisture content of gases, liquids and solids. It responds only to the presence of water and is capable of reading the relative moisture content over a wide range from "bone dry" to soaking wet.

According to the manufacturer, it furnishes reliable and accurate indications of dryness in light fuels such as grass and brush, so that the skilled user can measure the flammability of such light fuels. It also can be used to indicate the moisture content in heavy fuel or soil when it is inserted into a log or buried in the ground. Other uses for the instrument can be applied in the kiln-drying of lumber, distillation of solvents and dehydration of gases and solids.

Detailed information and data sheets are available from the manufacturer, Advanced Instrument Corporation, 700 South 4th Street, Richmond, California.

Rhode Island Training

SOMETIME in late September or early October the Second Annual Fire Academy will be held by the Rhode Island Firefighters Instructors Association. This organization, formed in late 1958, now includes 19 certified drill masters from various parts of Rhode Island. In its brief existence it has given training to more than 2,000 fire fighters. Its first "academy," held last year, had 315 instructors in attendance.

At present the training courses consist of four sessions of three hours each, and upon successful completion of the courses a fire fighter is awarded a certificate of the State Department of Education Adult Vocational Division. The instructors previously received a 60-hour teacher-training course given by the Department of Education.

The second Annual Academy is scheduled to be held at the Newport Naval Station training grounds. Present officers of the association are shown below.

Officers of the Rhode Island Firefighters Association are shown in group above (*left to right*): Edward Medeiros, State Department of Education; Captain Michael J. Fox, East Providence Fire Department, outgoing president and present State Supervisor of Firemen Training; Lieutenant Ronald Jones, Cranston Fire Department, president; Deputy Chief James Pryor, West Warwick Fire Department, vice president, and Lieutenant Santo Amato, Hillsgrove Security Section at State Airport, secretary-treasurer.

FIRE SERVICE MEETINGS

California:

July 15: Marin County Association of Fire Departments, monthly meeting, Novato. Contact W. H. Lane, secretary, 74 Vendola Drive, San Rafael, California.

July 21: Redwood Empire Firemen's Association, quarterly meeting, Napa. Contact W. H. Lane, secretary, 74 Vendola Drive, San Rafael, California.

Michigan:

July 27–29: Michigan State Fire Fighters' Association, annual convention, Pantlind Hotel, Grand Rapids, Michigan. Contact Nicholas Karp, secretary, 1342 Allerton Ave., S.E., Grand Rapids 6, Michigan.

Missouri:

July 21: Franklin-Gasconade County Firefighters' Association, regular meeting, Pacific, Missouri. Contact E. J. Schmidt, president, 208 Mardet St., Washington, Missouri.

Nebraska:

July 21: Thayer County Volunteer Firemen's Association, regular meeting, Bruning, Nebraska. Contact B. J. Cabrera, secretary, Box 446, Deshler, Nebraska.

New Mexico:

July 11–13: New Mexico State Firemen's Association, 1960 convention, Las Vegas, N. M. Contact F. W. Wynn, secretary, 505 E Roxana St., Hobbs, New Mexico.

New York:

July 8: Rockland County Volunteer Firemen's Association, monthly meeting, Garnerville, N. Y. Contact M. R. Blauvelt, secretary, 142 Depew Ave., Nyack 5, N. Y.

July 10–14: New York State Fire Fighters' Association, 22nd annual convention, Utica, N. Y. Contact R. R. Cohn, secretary, P.O. Box 5, Long Beach, N. Y.

July 14: Mid-Hudson-Harlem Valley Fire Chiefs' Association, monthly meeting, Roosevelt, Hyde Park, N. Y. Contact Dick Kennedy, secretary, Box 18, Glenham, N. Y.

July 17–23: Jefferson County Volunteer Firemen's Association — Old Home Week Celebration, Gananoque, Ontario, Canada, with fire departments' 11th International Firemen's Day celebration, Saturday, July 23. Parade at night. Contact Gerald F. Hampton, secretary, Gananoque, Ont., Canada.

July 21–23: Hudson-Mohawk Volunteer Firemen's Association, 1960 annual convention, Hoosick Falls, N. Y. Contact W. J. Hopmeier, secretary, Box 267, Schenectady 4, N. Y.

July 21–24: Central New York Firemen's Association, 1960 convention, Cortland, N. Y. Contact Lewis W. Lang, general chairman, 110 Groton Ave., Cortland, N. Y.

July 25–27: Western New York Volunteer Firemen's Association, 61st annual convention, Hilton, N. Y. Contact H. A. Craig, secretary, P.O. Box 1, Alexander, N. Y.

July 26: Orange County Volunteer Firemen's Association, regular meeting, Walden, N. Y. Contact Kenneth Fowler, secretary, Harriman, N. Y.

July 26: Suffolk County Volunteer Firemen's Association, quarterly meeting, Suffolk County Fire Training Center, Yaphank. Contact George Hechler, president, 9 Bayview Ave., East Islip, L. I., N. Y.

July 29–30: Columbia County Volunteer Firemen's Association, 1960 convention, Stockport, N. Y. Contact E. L. Rowe, secretary, Box 118, Mellenville, N. Y.

July 31: Monroe County Volunteer Firemen's Association, quarterly meeting, Churchville, N. Y. Contact N. C. Morrell, secretary, 241 Buckman Rd., Rochester 15, N. Y.

North Carolina:

July 12: Eastern Carolina Fireman's Association, quarterly meeting, LaGrange, N. C. Contact M. C. Lassitter, Jr., secretary, Snow Hill, N. C.

Ohio:

July 7: Tri-County Volunteer Firemen's Association, monthly meeting, Richmond, Ohio. Contact C. W. Luyster, secretary, Piedmont, Ohio.

July 12: Summit County Firemen's Association, monthly meeting, Copley, Ohio. Contact Harry Harris, secretary, 998 Kubler St., Akron 12, Ohio.

July 20: Greene County Firefighters' Association, Xenia, Ohio. Contact W. H. Shoemaker, secretary, 523 Glover Drive, Xenia, Ohio.

July 28: Stark County Firemen's Association, monthly meeting, North Canton, Ohio. Contact Gene Kay, 2036–29th St., N.E., Canton, Ohio.

Oregon:

July 29: Polk-Yamhill Firemen's Association, monthly meeting, Dallas, Oregon. Contact Glen Wick, secretary, 209 Hayter St., Dallas, Oregon.

Pennsylvania:

July 15–16: Fayette County Firemen's Association, annual convention, Connellsville Twp. Volunteer Fire Department. Contact Fred R. Gustafson, secretary, P.O. Box 126, Connellsville, Pa.

July 25: Lehigh County Volunteer Firemen's Association, monthly meeting, Orefield, Pa. Contact Arthur Mohr, secretary, Vera Cruz, Pa.

Rhode Island:

July 12: Woonasquatuckett Valley Firemen's League, monthly meeting, Foster Center Fire Station. Contact A. F. Rail, secretary, Chopmist Hill Rd., Scituate, R. I.

Wisconsin:

July 18–20: Wisconsin State Fire Chiefs' Association, 32nd annual conference, Oshkosh (American Legion Post No. 70). Contact Chief D. J. Dunlop, secretary, 1463 Underwood Ave., Wauwatosa 13.

July 21: Eastern Wisconsin Firemen's Association, quarterly meeting. Contact Ardell Braun, secretary, 1438 N. 43rd St., Sheboygan, Wis.

July 30, 31: Badger Firemen's Association, summer tournament, Random Lake, Wis. Contact A. F. Bruderle, secretary, 505 E. Portland Ave., Cedarburg, Wis.

Firemen's Training in the Months Ahead

Arizona: The Eighth Annual Arizona State Fire School will be held in Phoenix, October 20–22. For information write to Chief Jake Siken, Supervisor of Training, Phoenix Fire Department.

British Columbia: The Fire Marshal's Traveling Instructional Unit will continue instructional classes throughout the Province. For details contact Fire Marshal Basil Nixon, 411 Dunsmuir St., Vancouver 3.

The British Columbia Fire Chiefs' Annual Fire College will be held at Campbell River. For details write to W. A. Oswald, secretary, 7850 Osler Avenue, Vancouver.

Florida: A seminar in arson detection and investigation will be held August 8–12. Resident training classes will be held during September. For details contact W. H. Barnett, superintendent, Florida State Fire College, P.O. Box 785, Ocala.

Idaho: The Idaho State Fire School will be held on August 18–20 at Moscow, Idaho. For information contact Fire Chief Steve Taylor, City Hall, Boise.

Indiana: The 27th Annual State Fire School will be held September 14–17. A three-day Fire Inspectors' Course will be held October 25–27. For information contact Professor Shelby Gallien, director, Public Safety Institute, Purdue University, Lafayette.

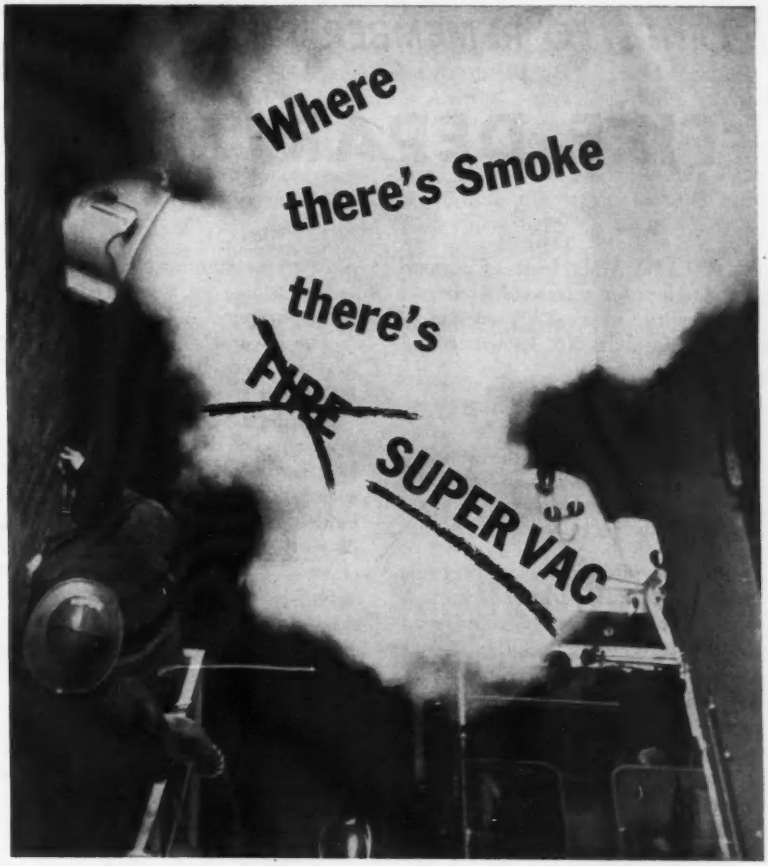
Maryland: The 27th Annual Short Course for Firemen will be held on September 6–9 at the University of Maryland. For details contact Robert C. Byrus, director, Box 85, College Park.

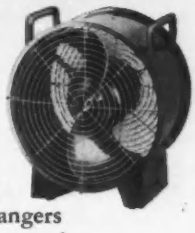
Michigan: The 11th Annual Michigan Fire Inspectors' Conference will be held at Michigan State University Kellogg Center, East Lansing, September 27–30. The Annual Meeting of the Michigan Fire Inspectors' Society will be held during this conference. Contact Arthur Patriarche, secretary, 550 Gunson Street, East Lansing.

Missouri: The Annual Missouri State Fire School will be held at the University of Missouri at Columbia on July 22–24. For information contact W. Bush Walden, administrative assistant in charge of firemanship training, University of Missouri, 10 Lathrop Hall, Columbia.

Ohio: The Seventh Annual Ohio State Arson School will be held September 12–16 at the New College of Law Building, Ohio State University, Columbus. For further information contact Chief Ray Davis, Arson Bureau, Ohio State Fire Marshal's Office, 21 W. Broad Street — 6th Floor, Columbus 15.

Regional fire schools are scheduled for North College Hill, September 24–25, and Athens, October 9. Contact Byrl R. Shoemaker, supervisor, Trade and Industrial Education Service, 220 South Parsons Avenue, Columbus.





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POINTS TO REMEMBER ABOUT

FIRE DEPARTMENT LADDERS

A STANDARD load of ground ladders for aerial ladder trucks as specified in the 1960 edition of NFPA Standard No. 19 consists of:

1 50-foot extension ladder
2 35-foot extension ladders
1 28-foot extension ladder
1 20-foot single ladder with roof hooks
1 16-foot single ladder with roof hooks
1 14-foot extension ladder
1 10-foot folding ladder

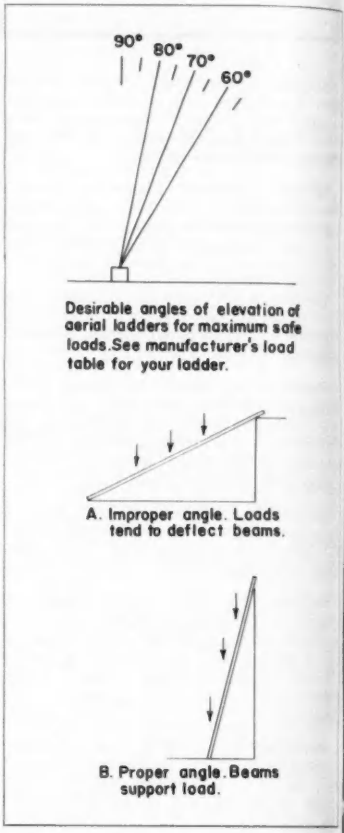
This provides 208 feet of portable ladders in addition to the aerial ladder. It has been pretty well agreed by most fire chiefs that the 35-foot length is the work-horse ladder of the fire service. It will reach the roof of most buildings less than four stories in height and it may also be used effectively for reaching elevations between 20 and 32 feet in height.

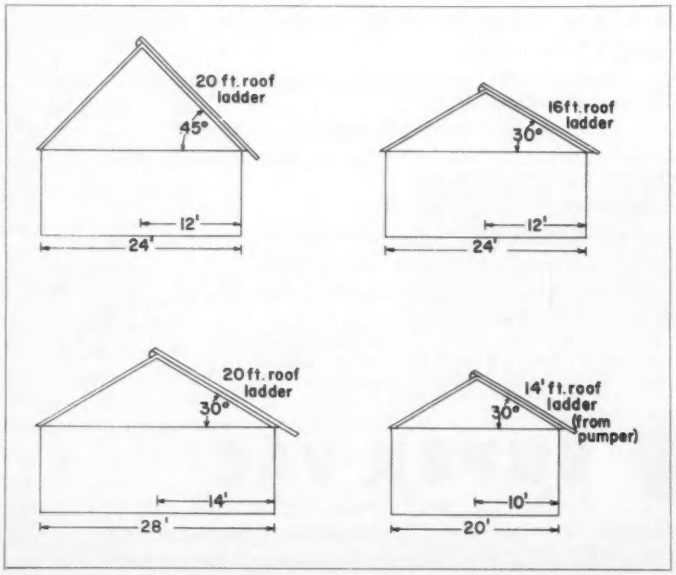
Former editions of Standard No. 19 specified a 25-foot single ladder. This ladder had limited usefulness and has been replaced by a 28-foot extension, which will reach the eaves of most 2½-story dwellings and the third-floor windows of many residential properties. The 24-foot extension formerly specified is now omitted as standard equipment on ladder trucks but is basic equipment for a pumper.

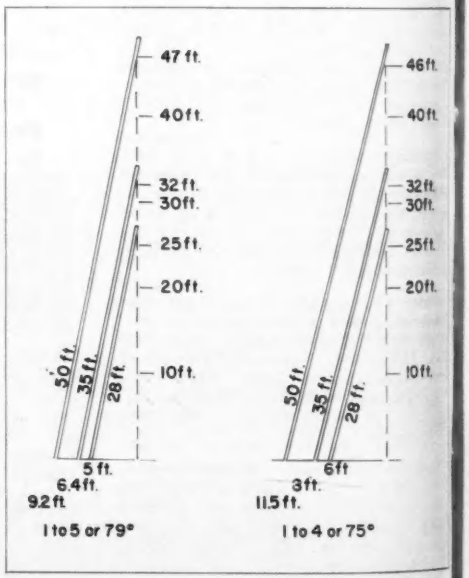
The 16- and 20-foot single ladders may be used either as straight wall ladders or as roof ladders.

Fire department ladders are measured on the basis of their usable length when extended. For example, a designated 28-foot fire department ladder extends 28 feet whereas a 28-foot painter's ladder consisting of two 14-foot sections may extend only 24 feet. It is generally considered good practice to have the end of the fire ladder extend a couple of feet above the roof or window sill that is to be reached, to provide footing and hand holds for persons stepping on or off the top of the ladder. Also, because the base of the ladder must be placed away from the wall to provide a safe angle for climbing, one or two feet of reach will be sacrificed. Accordingly, the safe or effective vertical reach will be something less than the full length of the ladder.

The sketches on this page and the following table show the effective lengths of standard ground and roof ladders placed properly.


90°
80°
70°
60°
Desirable angles of elevation of aerial ladders for maximum safe loads. See manufacturer's load table for your ladder.
A. Improper angle. Loads tend to deflect beams.
B. Proper angle. Beams support load.





Length of Ladder	Usual Effective Vertical Reach
50 feet	46 feet
35 feet	32 feet
28 feet	25 feet

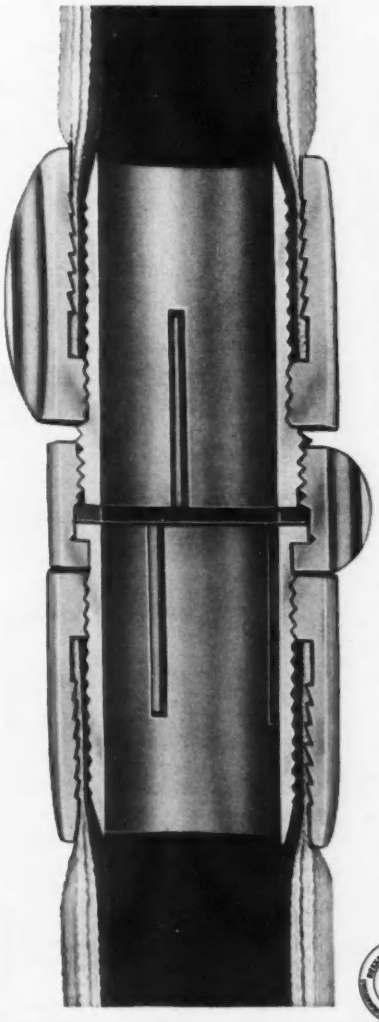
The standard ladder complement of an aerial truck includes two ladders capable of reaching windows of a fifth floor — the aerial and the 50-foot extension. The aerial requires less men to raise but its use is limited by the necessity of getting the ladder truck into the desired position. The 50-foot extension can be raised in fairly restricted space but generally requires at least five or six trained men even when the ladder is of aluminum construction. A few large cities that feature numerous four- and five-story buildings of combustible construction have ladder trucks carrying an additional long ladder (40-, 45-, or 50-foot). General practice, however, is to assign additional ladder trucks to alarms where a greater complement of ladders is needed, because additional manpower is required to raise the ladders and perform other truck company duties. The standard ladder load provides five ladders capable of reaching a third-story window. This should be enough for a six-man truck crew to handle, especially if they are going to make rescues over the ladders or perform forcible entry and ventilation work.

In spotting ladders at correct angles for climbing, the most general practice is to place the base of the ladder out one foot for each four feet of vertical distance to be reached, with due allowance for projecting cornices or sills. This gives an angle of 75 degrees with the ground level (15 degrees off vertical). Some departments use a ratio of one foot from the wall for each five feet of height. The straighter the ladder is in relation to the wall, the more efficient is the load-carrying ability of the beams. However, when a ladder is placed too near the vertical, it is difficult to climb and there is danger that it may be tipped over backwards if it is not adequately dogged at the top.

Ladder trucks carry 16- and 20-foot straight ladders with folding roof hooks. The sketch shows various roof ladder requirements. If a roof is high-pitched, even with a building of only 24-foot depth, an 18- or 20-foot roof ladder is required. If a roof is low-pitched, and the span of the roof is not over 24 feet with the ridge in the center, a 16-foot roof ladder should be adequate. For small dwellings of only 20- or 22-foot depth having low-pitched roofs, the 14-foot roof ladder carried on the pumper should be adequate.

In general, where the dimension of a roof from ridgepole to eaves is between two ladder sizes, it may be desirable to use the longer ladder. It is easier to place the longer roof ladder in position from a wall ladder and the two ladders can be tied or dogged together. In areas where there are large barns or institutional buildings having sloping roofs, extra long roof ladders up to 28 feet may be carried. However, there is frequently a problem of finding space on a ladder truck for additional long straight ladders and the practical solution may be to use two roof ladders where extra reach is required. These should, of course, be spliced or secured with ladder dogs.

The quantity and size of ladders recommended for trucks cover a variety of fire ground needs. It is essential, however, that the ladder crews pick the right ladder to do the right job at the critical moment.



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UL TESTED for 1400 lbs. pressure and 2400 lbs. pull under full pressure.

BAR-WAY BAR-WAY MFG. CO., STAMFORD, CONN.

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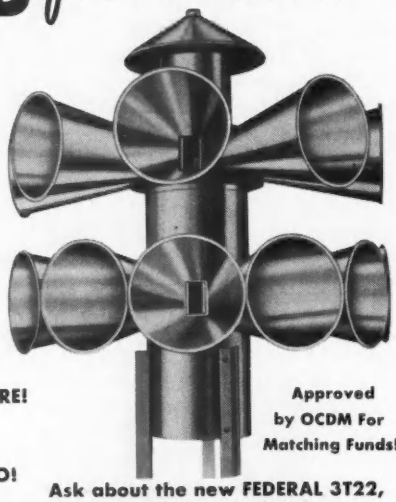

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From Our Readers . . .

Dear Sir:

I am writing . . . for information on magnesium fires . . . What causes the reaction when water is applied to the burning metal? Literature that I have mentions that water should not be used because of the resulting explosion but gives no reason or definition of the reaction. Can you help me on this subject?

Signed Chief W.B.R.

Reply

Dear Chief R.:

There are at least two reasons why water is not a recommended extinguishing agent for magnesium fires. In the first place, when magnesium is hot, it reacts with water to form magnesium oxide and hydrogen gas and also releases heat in the process. The magnesium oxide is perfectly harmless, but the hydrogen gas burns. Also, the heat given off by the reaction intensifies the burning. When magnesium is burning it is also melting, and usually in a magnesium fire there is a puddle of molten magnesium somewhere nearby. When water strikes molten magnesium, you get a violent eruption as the water is immediately converted to steam. There are many other materials that also cause the steam formation such as sodium nitrate, and this is why use of water in the vicinity of salt baths is a hazardous operation.

There are, of course, many situations where water is the only thing that would be practical to use. For example, in a combustible building on fire in which magnesium was stored you would have no choice but to use hose streams to put out the fire. In such cases care should be taken to prevent water from coming in contact with the magnesium and care should be taken to prevent injuries to fire fighters in case of hydrogen explosions and steam eruptions, both of which might cause spattering of the molten magnesium.

I am enclosing photocopies of two or three pages from a book entitled *Fire Protection for Chemicals* which was written by Deputy Chief C. W. Bahme of the Los Angeles Fire Department. I thought you might be interested in what Chief Bahme has to say about magnesium fires.

Signed Chester I. Babcock
NFPA Staff Chemist

FIRE PROTECTION FOR CHEMICALS

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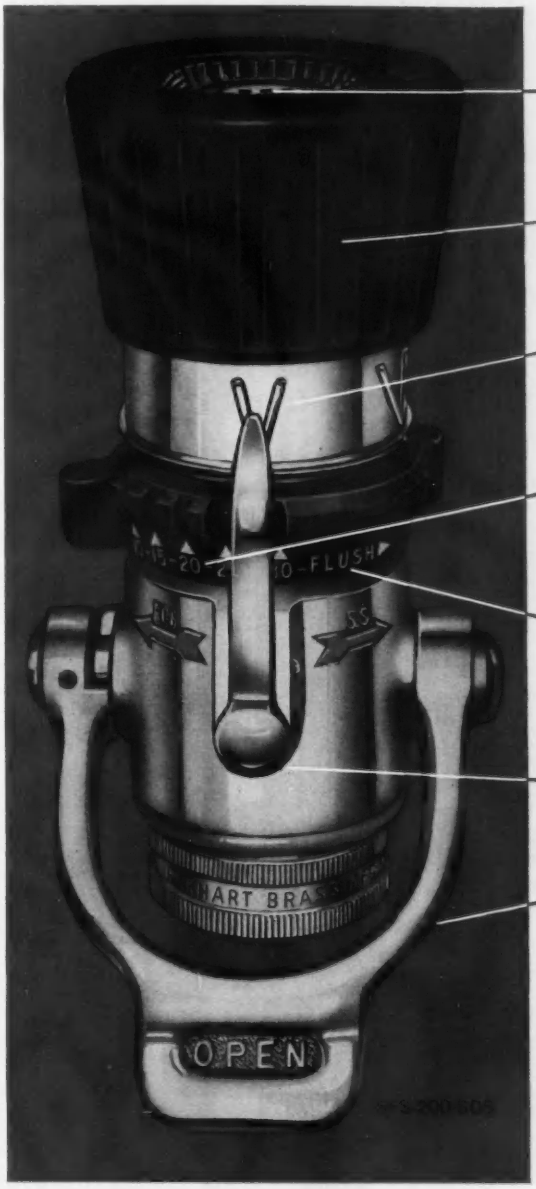
ELKHART'S NEW 1"

Select-O-Flow constant flow mystery nozzle

THE ONLY NOZZLE DESIGNED FOR USE ON BOTH ¾" and 1" booster hose!

Here's real booster hose performance! Run it up to 30 G.P.M.—throttle it down to 10 G.P.M.—less if you wish, and use it to mop up. Complete variable gallonage selection for ¾" and 1" booster hose plus constant flow for any pattern. Calibrated at 10-15-20-25-30 G.P.M. at 100 p.s.i. No matter what pattern—no fluctuating engine pressure. And at a 10 or 15 G.P.M. position for ¾" booster hose, no excessive engine pressure is needed. This is the booster nozzle you'll want to see in action—and action you'll get when you call your nearest Elkhart representative.



This new nozzle is tough, rugged, lightweight and non-corrosive. Made of a new material—harder than a file, twice as strong as brass yet only ⅕ the weight.

New synthetic bumper and hand grip resistant to oil, heat and sunlight.

Has Elkhart's exclusive stream indicators. Raised so that you can feel the braille-like pattern indicator.

Variable gallonage selector calibrated at 10-15-20-25-30 G.P.M. at 100 p.s.i. nozzle pressure. Gallonage can be changed without shutting down the line.

Flush position. Exclusive feature for cleaning nozzle without shutting down. No screen to clog.

Shut-off features new bonded seat, makes it possible to adjust for wear without disassembling nozzle.

Improved handle for easier operation.

The SFS-200 SOS is a hydraulically balanced nozzle. It can be operated at the highest pressure used in the fire service, yet gives excellent results at the lowest pressure.

See this new nozzle in action. Call your nearest Elkhart representative for a demonstration of this major development in booster nozzles.

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The beautiful Champion Fire Apparatus, illustrated above, is an unbeatable value in a 750 gallon Class A pumper which conforms to all specifications of the National Board of Fire Underwriters and all State Insurance Bureaus. Delivers 750 gallons per minute at 150 lbs. pressure, 525 GPM at 200 lbs., 375 GPM at 250 lbs. to meet all requirements for Class A Underwriter rating, the highest rating given to any pumper, no matter whether you pay 25% to 50% more than our low price.

Pump — The Darley Champion Pump, manufactured exclusively by W. S. Darley & Co., is the Type SH750, 3-stage centrifugal, which delivers, in addition to Underwriter performance, pressures up to 1,000 lbs. for high pressure fog fire fighting. You get everything you'll ever need in fire fighting efficiency when you get a Champion Pumper. And if it's big volume you want this SH750 will actually deliver 900 gallons per minute pumping water from a river or lake and 1350 GPM pumping from a hydrant which has average to good flowing pressure.

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Watch That Sodium!

DEMONSTRATIONS at fire schools and fire service conventions are conducted with the best of care and supervision. Occasionally, however, the unexpected can happen and sometimes tragedy can result. It is hardly necessary to warn the fire service of the dangers inherent in combustible solids, liquids, and gases. Nevertheless, the following excerpt from a recent bulletin of a state firemen's association reports a "near miss" which should be given consideration by all persons responsible for conducting demonstrations.

"Out on the demonstration grounds . . . a one-pound block of sodium metal . . . was placed . . . in a large bucket and heated with an LP-Gas flame until it melted and caught fire. As you know, sodium will react very violently when it comes in contact with water. Therefore, it was necessary to heat it in the bucket to prevent it from reacting with moisture in the ground. When the metal was burning [he] stepped in with an [appropriate] extinguisher and it succeeded in controlling the fire to the extent that it could be safely removed to a location where it could burn itself out. The bucket was then thrown in one of the water-filled oil pits. It smoked, sputtered, and threw sparks for a few seconds and blew up with a tremendous explosion. Fortunately for the crowd of nearly 50 persons gathered, the remains of the bucket flew in the opposite direction from where the people were standing."

Ninety Exhibitors for IAFC Conference

CHIEF L. C. Canning, Exhibit Chairman, reports only a few booths left at Rochester's War Memorial, where the 87th IAFC Conference will be held September 12-15. The National Fire Protection Association will be located at Booth 23. Shown below is the complete list of 90 exhibitors reported as this issue goes to press.

Air-Shields, Inc.
Akron Brass Manufacturing Company
Alim Corporation
American City Magazine
American District Telegraph Company (ADT)
American Fire Apparatus Company
American Fire Pump Company
American LaFrance Corporation
American Tel. & Tel. Company
Antrex Corporation
Ardmore Products
Atlas Safety Equipment Company

Batrow Laboratories
John Bean Division
Bi-Lateral Fire Hose Company
Blackhawk Manufacturing Company
V. H. Blackinton & Company, Inc.
Boston Woven Hose & Rubber Company
Boy Scouts of America

Carpenter Manufacturing Company
Chevrolet — Central Office
Circul-Air Corporation
Cornelius Company

Dictaphone Corporation
Divco-Wayne Corporation
Doho Chemical Corporation
E. I. du Pont de Nemours & Co. (Inc.)

Elkhart Brass Manufacturing Company, Inc.

FWD Corporation
Fabric Fire Hose Company
Falcon Alarm Company, Inc.
Federal Sign and Signal Corporation
Fire Engineering
Ford Division, Ford Motor Company
Fyrepel Products, Inc.
Fyr-Fyter Company

G. M. C. Truck & Coach Division
Gamewell Company
Gerstenslager Company
Globe Manufacturing Company
B. F. Goodrich Company
Goodyear Pumps, Inc.

Hale Fire Pump Company
Clifford B. Hannay & Sons, Inc.
Hercules Motors Corporation
Hess & Eisenhardt Company
Hewitt-Robins, Inc.
Thomas M. Higgins Company
Hobby Enterprises, Inc.
Howe Fire Apparatus Company

Koehler Manufacturing Company
Kohler Company

Leece-Neville Company

Mack Trucks, Inc.
Mars Signal Light Company
Maxim Motor Company
F. N. McIntire Brass Works
Metcalf, Inc.
Minnesota Mining & Manufacturing Company
Mine Safety Appliances Company
Motorola Communications & Electronics, Inc.

National Fire Protection Association
North American Signal Company

Ohio Chemical & Surgical Equipment Company
D. W. Onan & Sons
Oxygen Service & Sales Co.

Phon-Alarm Division, Angelus Industries, Inc.
Peter Pirsch & Sons Company
Plectron Corporation
Powhatan Brass & Iron Works

Rockwood Sprinkler Company

Santa Rosa Nozzle Company
Sarole, Inc.
Scott Aviation Corporation
Seagrave Corporation
Wm. Simpson & Sons
Sireno Company, Inc.
D. B. Smith & Company
Snorkel Fire Equipment Company
Standard Fire Alarm & Signal, Inc.
Stephenson Corporation
Superior Corporation
Super Vacuum Manufacturing Company

Emmanuel Trilling

U. S. Rubber Company

Ward LaFrance Truck Corporation
Washington Products Company
Waterous Company
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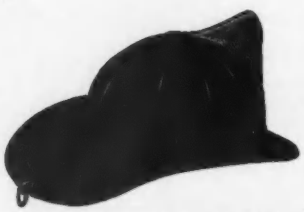

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News About SPARKY

MARCH is the month when Fire Prevention Week is celebrated in Manila.

Apart from the name of the month, however, the observance is much the same as might be found taking place in any large American city during October, including the presence of Sparky.

A week-long saturation-schedule opens Tuesday with literature distribution to the public, open house at all fire stations, and a parade.

Sparky messages dealing with specific fire hazards in the home help to illustrate a 60-page pamphlet which goes out to the entire population of the city.

The pamphlet programs the week's activities, and contains articles on fire safety as well as pertinent messages from the President of the Republic, Manila's Mayor and the Fire Chief of the Manila Fire Department.

1960 Fire Prevention Contest

IT'S not too early to be planning your entry in the 1960 Fire Prevention Contest open to all communities, industrial plants, government and military facilities.

Municipal entries are classified and judged according to the population of the community. The latest census figures should be used in the current contest.

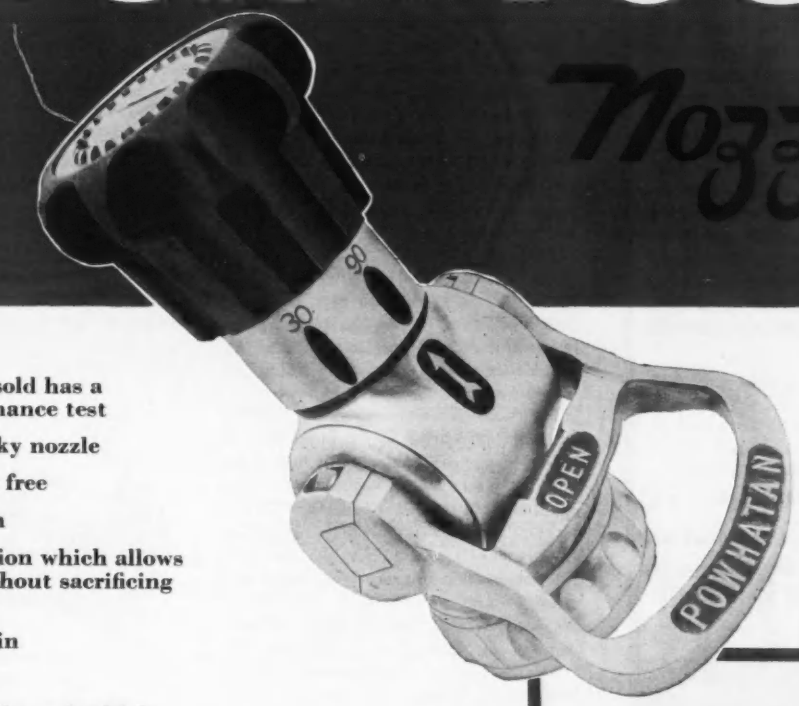
Other divisions in the competition are also subdivided so that the fairest possible competitive situation is achieved for all entrants.

Suggested size of entry book is not more than 18 in. square. Organizing the material into concise, easy-to-handle form is important.

Material should be assembled to follow the outline of the contest entry form and preferably labeled so that judges may turn from statements made in the entry form directly to substantiating evidence.

Entry forms, returnable by November 30, are available from the NFPA offices. Please specify which form you wish sent: municipal, industrial, government or military.

Powhatan's DURA-FOG Nozzle



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- Each nozzle sold has a 100% performance test
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- Maintenance free
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- Finer dispersion which allows less GPM without sacrificing effectiveness
- Denser curtain
- No kickback
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TRY IT OUT!

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OVER A MILLION SHUT-OFFS AND NEVER A LEAK!

Dura-Fog Nozzles have been thoroughly bench tested, to assure dependability. We strived for 250,000 shut-offs, actually tests have gone over a million with no leak!

FLOW IN GPM AT 100 PSI NOZZLE PRESSURE

Size	Straight Stream	30° Fog Pattern	60° Fog Pattern	90° Fog Pattern
1"	20	22	32	35
1½" -60	57	60	72	88
1½" -100	95	100	105	107
2½"	135	165	190	225

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We are a principal manufacturer of fire hose, long established and nationally recognized for quality and performance. In keeping with our strong sales growth trend, we propose in the near future to introduce a new fire hose type, dynamically engineered for modern fire fighting. Our territorial assignments are exclusive; however, we wish to increase our market penetration in certain areas. We would sincerely appreciate receiving your qualifications and we will review them on a confidential basis.

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this month's *News and New Products*

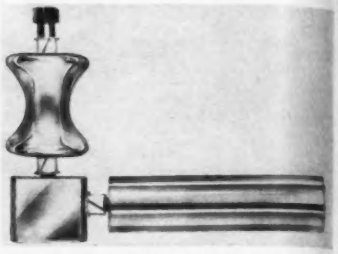
Useful in salvage work are the Shuredry Green-Bay covers (also nylon), made by *Fulton Cotton Mills*, P. O. Box 1726, Atlanta 1, Georgia. . . . For promotional preparation, look into the fire study material offered by *Davis Coaching School*, 100 Edgehill Way, San Francisco 27, California. . . . Now is the time to check your needs for back pack fire pumps, before grass and brush calls run your heavier equipment ragged. . . . Useful to inspectors and chiefs alike is the new 1960 edition of NFPA No. 325 "Fire-Hazard Properties of Flammable Liquids, Gases and Volatile Solids" listing 1,000 chemicals, 128 pages in pocket size, for $1.50. Order today from *Publications Department*, NFPA, 60 Batterymarch Street, Boston 10, Massachusetts. (*See page 35.*)

For your recreation, reading, library and dining rooms, a complete line of tables, benches, chairs and folding-leg units is offered by *Foldcraft*, Mendota, Minnesota. Ask them for their "Factory to You" catalog and price list. . . . Cadillac ambulances reconditioned like new — a new nation-wide program to save operators money — are now offered by *Miller-Meteor Division, Divco-Wayne Corporation*, South Elm Street, Bellefontaine, Ohio. . . . The first single fire extinguisher with the UL listing for Class A, B, C and magnesium fires is marketed by *Alim Corporation*, 11 Park Place, New York 7, New York. . . . San Francisco Fire Department has awarded a $269,000 contract to re-equip its entire department with *Allen B. Du Mont Laboratories, Inc.*, two-way radio communications.

•

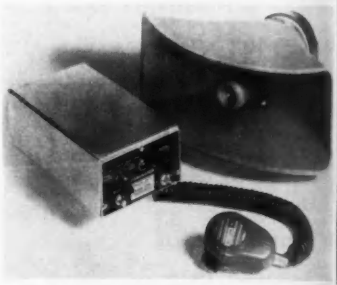
Kohler Co. Introduces New 2KW Electric Plant

A new 2KW electric plant powered by a single cylinder, four-cycle K241 engine, is announced by Kohler Company, Kohler, Wisconsin.



Bearings for Booster Hose Reels

To be exhibited at the IAFC Conference in Rochester, New York, in September, are the new Teflon slotted sleeve bearings and new rewind motor now standard on booster hose reels by Clifford B. Hannay & Son, Inc., Westerlo, New York.



New Apparatus Warning Unit Called "Dominator"

A new three-way radio unit for fire department cars and apparatus serving as an electronic siren, public address system, and radio call amplifier is announced by Dazllite Products Company, 17 E. Pershing Road, Kansas City, Missouri.

"Fireman Smoke Mask" by Acme Protection Equipment

From an idea worked out by a fireman comes the new Fireman Smoke Mask by Acme Protection Equipment Company, 1201 Kalamazoo Street, South Haven, Michigan. Write them for complete details.

Howe Fire Apparatus Company, Anderson, Indiana, recently appointed these exclusive dealers or distributors: Melvin C. Schmidtke, 5036 South Lotus Avenue, Chicago 38, Illinois, and A. H. Sherwood, 506 West Park Avenue, Round Lake, Illinois (southern Wisconsin and northern Illinois); L. W. Walters, P. O. Box 91, Osceola, Arkansas; Norris Spencer, General Fire Extinguisher Company, Denver, Colorado; Dan Tuttle, National Supply Company, 2606 Seward Highway, Spenard, Alaska; and Martin Anderson, 10 West William Street, Bay Shore, Long Island, New York. . . . Fire-Lik wet-water liquid concentrate, for use with any standard line proportioner for ½ to 1 per cent liquid pickup, is described in Data No. 87. Write to *Deynor Corporation*, One Depot Plaza, Mamaroneck, New York.

●

Light Switch Card With Fire Call Number

A new "Tele-Post Card" that fits over your hall or bedroom light switch provides instant identification of fire and police telephone numbers. Write to J. L. Lambin, 5241 N. Magnolia Avenue, Chicago 40, Illinois.

School Fire Film Has Impact!

HAILED as perhaps the most significant and influential fire prevention film ever produced "Our Obligation," a 26-minute 16-mm color film, will prove of great assistance in educating our citizens to their responsibility for school fire safety and in giving them basic information on the subject.

Produced by the Los Angeles Fire Department, the film maintains the highest standards of professional excellence. It is not available on a loan or rental basis but may be purchased at $185 per copy from Cinesound Company, 1037 N. LaBrea Ave., Hollywood 38, California. Price includes reel and can. Shipping charges are extra.

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Consider the products advertised in this issue.

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Badges, youngsters'	33
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Film, rescue breathing	26
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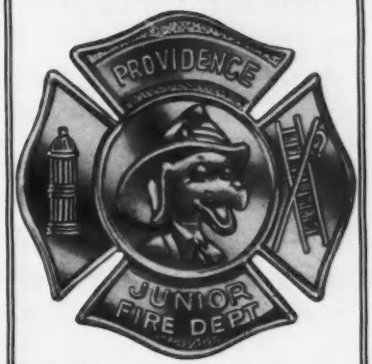

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Special price for larger quantities

Standard "Sparky's Fire Dept." badges are 15c each in dozen lots plus postage.

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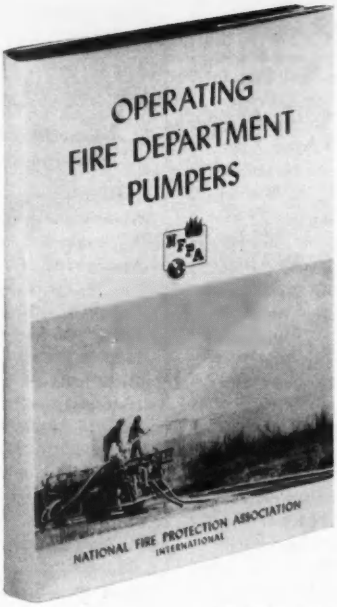
OPERATING FIRE DEPARTMENT PUMPERS?

An excellent manual for all who use and operate fire department pumpers



Second edition

Clothbound

180 pages

5½- by 8½-in.

In answer to a great many requests by fire service members, the popular book, *Operating Fire Department Pumpers,* has been completely rewritten in a new edition. First published in 1954, this manual has been used widely as a reference and training text for paid, call and volunteer fire departments and fire service training authorities.

The new edition brings together a great deal of up-to-date information, reflecting practical fire ground experience with improved pumping methods and equipment. It also conforms with the most recent changes that have been made in NFPA standards on fire department equipment.

This valuable book has been written specifically for fire department personnel. It presents sound, practical information that fire officers and pumper operators must know to use, care for, and operate pumpers efficiently. The text was reviewed by a special subcommittee which included representatives of the NFPA Committees on Fire Service Training and Fire Department Equipment.

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4. Taking Delivery of a New Pumper
5. Choosing Pumper Layouts
6. Putting Pumper in Service
7. Getting Water
8. Charging Hose Lines
9. Maintaining Pressure
10. Operating a Pumper Smoothly
11. Getting the Most from the Pumper
12. Determining Friction Loss, Pump Pressure
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14. Using Nozzle Tip as a Water Meter
15. Nozzle and Hose Reactions
16. Pumper Suction at High Lifts
17. Supplying Pumper Layouts
18. Relay Pumping
19. Range of "Good" Fire Stream
20. Comparing Area and Flow Capacity of Fire Hose
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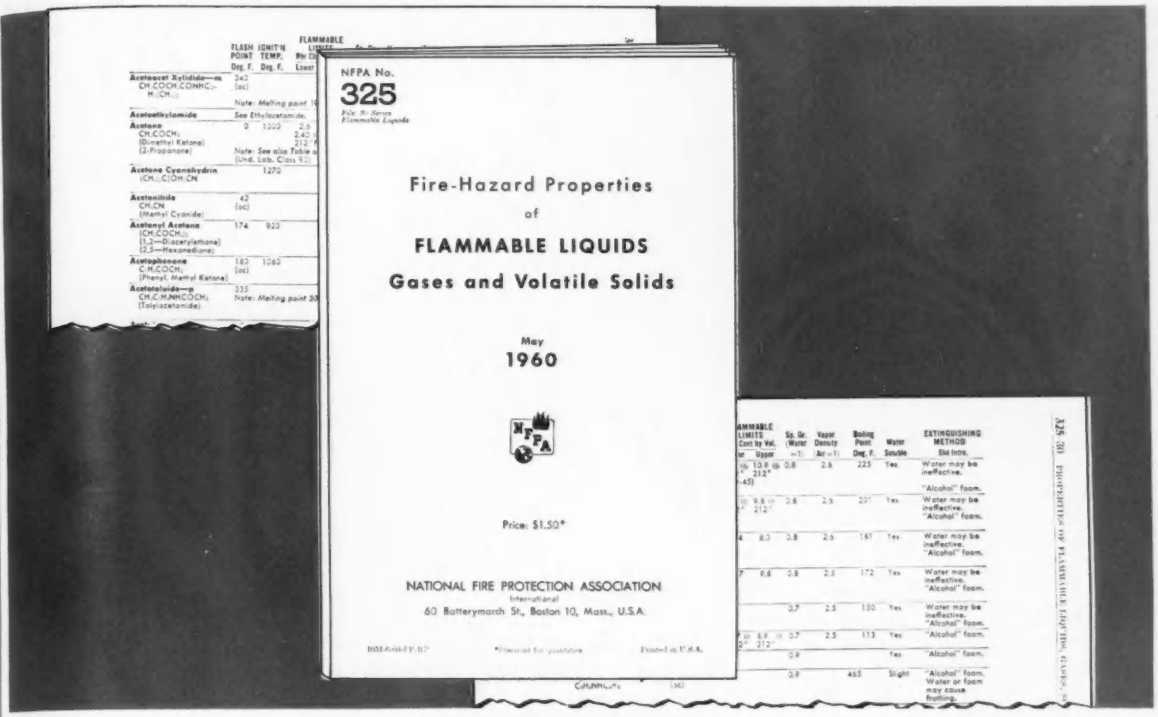

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For each substance, this booklet lists:

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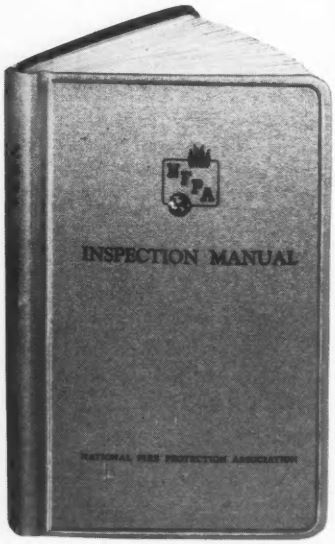
NFPA INSPECTION MANUAL

SECOND EDITION



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Every fire station library should include this Second Edition of the popular NFPA Inspection Manual — one of the most useful pocket-sized reference books for fire inspectors and fire fighters. Prepared by the NFPA staff, assisted by a group of consultants experienced in inspection problems, the book is particularly helpful to beginners and is equally important to experienced personnel.

Much new information was gathered for this 1959 edition, covering such subjects as smoke pipe clearances, resins and plastics, radioactive materials, pyrophoric metals, flamespread rating, and extinguisher testing and rating. A number of new tables are included together with standard plan symbols in full color.

Particular attention is given to inspection procedure, what to look for in various occupancies, heating hazards, inspection of protective equipment, what "approvals" mean, and how to make plans and reports.

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